MARKET COMMENTARY

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Proceedings of the Canadian Agricultural Outlook Conference
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Foreword

The 1986 Canadian Agricultural Outlook Conference was held in Ottawa on December 8-9, on the theme "The Competitive Position of Canadian Agriculture". The selection of the theme recognizes the increasing international nature of Canada agriculture and the need to examine the factors contributing to improving Canada's competitiveness.

The presentation from the plenary session on the conference theme is included in the proceedings which outlines many of the basic issues relating to competitiveness. The proceedings also include special invited papers in the simultaneous commodity, food markets and farm input and income sessions that deal with specific aspects of the competitiveness issue. Also included are plenary session outlook papers.

More detailed analysis on agriculture sector and prospects for 1987 and 1988 are found in the December 1986 issues of Market Commentary (containing outlook for grains and oilseeds, animal and animal products, milk and dairy products, and horticulture and special crops), Food Market Commentary and Market Commentary: Farm Inputs and Finance.

H. Bruce Huff
Director
Market Outlook and Analysis Division
Policy Branch

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1986 CANADIAN AGRICULTURAL OUTLOOK CONFERENCE

DECEMBER 8 AND 9, 1986
GOVERNMENT CONFERENCE CENTER, OTTAWA

MONDAY, DECEMBER 8, 1986

08:15 **Registration**

Conference Chairman: Jean-Jacques Noreau
Deputy Minister
Agriculture Canada

Conference Theme: **"The Competitive Position of Canadian Agriculture"**

PLENARY SESSION I

Session Chairman: Jean-Jacques Noreau
Deputy Minister
Agriculture Canada

08:45 **Deputy Minister's Opening Remarks**

09:00 **Minister's speech**
The Honourable John Wise
Minister of Agriculture
Agriculture Canada

09:30 **Competitive Position of Canadian Agriculture**
Geo. Brinkman
University of Guelph

10:00 **Questions**

10:15 Break

10:45 **International Markets Outlook**
Abner Womack
Centre for National Food and Agricultural Policy
USA

11:15 **Outlook for Canadian Economy**
Judith Maxwell
Economic Council

11:45 **Questions**

12:00 **Banquet**
Arthur O. Olson, Assistant Deputy Minister, Research Branch, Agriculture Canada will speak on "Competitiveness and Research in the Coming Century" during the Banquet.

PLENARY SESSION II

Session Chairman: Frank Claydon
Assistant Deputy Minister
Policy Branch
Agriculture Canada

14:00 **Commodity Markets Outlook**
H.B. Huff
Agriculture Canada

14:30 **Food Markets Outlook**
Brian Davey
Agriculture Canada

14:45 **Canadian Agricultural Trade Outlook**
Don McClatchy
Agriculture Canada

15:00 Break

15:30 **Farm Income Outlook**
B.B. Perkins
Agriculture Canada

16:00-17:00 **Questions**

18:00 - 20:00 **Foreign Agricultural Attachés' Reception**

TUESDAY, DECEMBER 9, 1986

PLENARY SESSION III

Session Chairman: Jean-Jacques Noreau
Deputy Minister
Agriculture Canada

13:30 **Summary of Simultaneous Sessions**
D. Gilmour
Agriculture Canada

14:00 **Minister's Closing Speech**

14:30 **Dialogue with the Minister**
The Honourable John Wise
Minister of Agriculture
Agriculture Canada

15:00-16:00 **Closing Reception**

CONCURRENT SESSIONS

Tuesday, December 9, 1986

08:30-12:00 Livestock and Poultry
08:30-12:00 Grains and Oilseeds
09:00-12:00 Dairy
08:30-12:00 Horticulture and Special Crops
09:00-12:00 Farm Costs and Income
09:00-12:00 Food

LIVESTOCK AND POULTRY

(Main Hall)

Session Chairman: G.A. MacEachern
Deputy Minister
British Columbia Department
of Agriculture and Food

08:30 **Feed Grain Summary**
Craig Fulton
Agriculture Canada

08:40 **Poultry Outlook**
Paul Blakely
Agriculture Canada

08:55 **Hog Outlook**
Larry Young
Agriculture Canada

09:10 **Beef Outlook**
Janice Dyer
Agriculture Canada

09:20 **1986 Trade Highlights**
Al Boswell
Agriculture Canada

09:50 Break

Competitive Position of Canada's Meat Industry

10:05 **Production/Marketing**:
Andrew Schmitz
University of Saskatchewan, Saskatoon

10:35 **Slaughter/Processing**
Lloyd MacLeod
Vice-President, Meats
Canada Packers, Toronto

11:00 **Meat Merchandising**
Guy Massé, Vice-President, Meat Merchandising
Steinberg Ltd., Montreal

11:25 **Panel and Discussion Period**
(all speakers)

Rapporteur: C. L'Ecuyer, Agriculture Canada

GRAINS AND OILSEEDS

(Sussex Room)

Session Chairman: J. Drew
Deputy Minister
Saskatchewan Department of
Agriculture

08:30 **Chairman's Remarks**

08:40 **Changes in the 1985 U.S. Farm Bill**
Brian Paddock
Agriculture Canada

08:55 **Wheat Outlook**
Patti Miller
Agriculture Canada

09:10 **Coarse Grains Outlook**
John Irvine
Agriculture Canada

09:25 **Oilseeds Outlook**
Hans Duncker
Agriculture Canada

09:40 **Comment on Outlook**
Bill Parrish
Parrish & Heimbecker

09:55 **Questions and Discussion period**

10:15 Break

10:30 **Considerations in Licensing New Wheat Varieties**
Art Guitard
Chairman, Committee on Unprescribed Varieties

10:50 **Licensing New Wheat Varieties: A Producer Viewpoint**
S. Gordon
Farmer, Manitoba

11:10 **Licensing New Wheat Varieties: A U.S. Perspective**
Bill Wilson
North Dakota State University

11:40-12:00 **Questions and Discussion period**

Rapporteur: D. Fenety, Agriculture Canada

MILK AND DAIRY PRODUCTS

(Colonel By Room)

Session Chairman: G. Leblond
Deputy Minister
Quebec Department of
Agriculture,Fisheries and Food

09:00 **U.S. Dairy Situation and Outlook**
J.J. Miller
USDA

09:45 **The potential contribution of on-farm micro computers to enhanced dairy production competitiveness**
Wes Lane
Ontario Milk Marketing Board

10:15 **A comparative analysis of the Ontario and New York state Dairy Industries**
R.L.Morrison
Kemptville College of Agricultural Technology

10:45 Break

11:00 **Agriculture Canada Situation and Outlook**
Susie Miller
Agriculture Canada

11:40 **Response to Outlook and Discussion**
Henri Dorval
Fed. des Producteurs de lait du Québec

Rapporteur: R. Tudor Price, Agriculture Canada

HORTICULTURE AND SPECIAL CROPS

(Rideau Room)

Session Chairman: R. Moorehouse
Deputy Minister
Nova Scotia Department of
Agriculture and Marketing

08:30 **Market Outlook for 1987 and Beyond**

Fruit
John Smith
Chairman, Ontario Tender Fruit Marketing Board

Vegetables
Doug Flook
Chairman, Ontario Vegetable Marketing Board

Special Crops
Stan Kochanoff
President, Canadian Nursery Trade Association

Commodity Overview
Outlook for 1987
Robert W. Anderson, Agriculture Canada

09:45 **Questions and Discussion period**

10:00 Break

10:30 **How competitive is the Canadian Horticulture Sector?**
Hank Vander Pol
President
Canadian Mushroom Growers Association

11:15 **Questions and Discussion period**

Rapporteur: P. Sterne, Agriculture Canada

FARM COSTS AND INCOME

(Centennial Room)

Session Chairman: B. McEwen
Deputy Minister
Alberta Department of Agriculture

09:00 **Input Situation and Outlook**
Tom Wise
Agriculture Canada

09:20 **Provincial Income Outlook**
Wayne Jones
Agriculture Canada

09:40 **Questions and Discussion period**

10:00 Break

10:30 **Economic Implications of Biotechnology and Other Emerging Technologies in Crop Production**
W. Beversdorf
Allelix Inc.

11:00 **Economic Implications of Biotechnology and Other Emerging Technologies in Livestock Production**
Peter Trelawny
Agriculture Canada

11:30 **Questions and Discussion period**

Rapporteur: J. McKenzie, Agriculture Canada

FOOD

(Gatineau Room)

Session Chairman: C. Switzer
Deputy Minister
Ontario Department of Agriculture
and Food

09:00 **Situation and Outlook for Food Prices**
G. Richardson
Agriculture Canada

09:15 **Situation and Outlook for Food Processing and Retailing**
P. Cooper
Agriculture Canada

09:30 **Questions and Discussion period**

Competitive Position of Canada's Food Industry

09:45 **An Overview of Industry Productivity and Competitiveness**
D. West
Agriculture Canada

10:10 Break

10:30 **Implications for Trade**
Frank Cella
Nestlé Enterprises Limited

10:50 **Panel Reactions**
Dave Adams
Canadian Meat Council

Doug Lisle
Canadian Food Processors Association

G. Ghersi
Laval University

11:20 **Questions and Discussion period**

12:00 **Adjournment**

Rapporteur: B.H. Davey, Agriculture Canada

PLENARY SESSION I

OPENING REMARKS

Honourable John Wise

Welcome to the 52nd annual Agricultural Outlook Conference.

This event is the forum for my Department to release short-term and longer-term forecasts for the agriculture industry.

But it is more than that. It's also a chance for all of us to share information and ideas.

Each one of you recognizes the importance of our agriculture industry to the Canadian economy. To Canadian consumers. And to the rural way of life. You and I know that some good things are happening in agriculture. But there are also serious difficulties.

That's why now, more than ever, industry people and government people must listen to each other, and work together.

So I'm not just here to talk today. I'm also here to listen. My officials are also here to listen. And I hope you are, too.

Every year at this conference we hear some good news, and we hear some bad news. This year the good news is particularly good. The bad news, unfortunately, is quite bad.

Let's start with the good news.

One of the brightest spots is the livestock industry. Livestock producers saw a price upswing in 1986, and prices are expected to stay favorable into 1987.

More good news is farm expenses. They're down this year, mostly because of lower interest rates, lower feed prices and lower fuel costs brought. Those expenses came down partly because of new federal tax rebates on farm fuel. In fact, over $70 million of the decline is because of direct input rebates under federal programs.

Now let's turn to the not-so-good news.

It's no secret to anyone here that the United States and the European Economic Community are involved in a subsidy war that's pushing world grain prices way down.

The level of subsidies in the EEC and the U.S. have reached ridiculous proportions. Absolutely ridiculous.

A Canadian wheat farmer, on average, receives about $34 per tonne under government programs. Compare that to about $130 per tonne in the U.S. and the EEC. The gap in coarse grains is even wider. In Canada, it's about $18 per tonne, compared to more than $88 in the U.S. and nearly $170 per tonne in the EEC.

We're revising those numbers now, because we believe the subsidy levels are increasing.

The bottom line is that – because of pressures outside Canada's borders – grain and oilseed prices have dropped between at least 20 and 25% from last year.

I'm sure this will be somewhat offset by a substantial interim payment under WGSA next spring.

The grains situation is important to remember when you look at the farm income estimates.

For 1986, net farm income is forecast to surpass the 1984 record high. It will reach over $4.7 billion.

But you and I won't be fooled by the numbers. We are dealing with a very complex industry. So let's remember four things about the forecast:

- Number one: Even though total farm income has increased, the benefit is not shared equally. The record high reflects recovery in the livestock sector. But the grains sector is not sharing in that recovery. Not at all.
- Number two: Net farm income for 1986 does not really show the crop in world grain prices. Prices dropped during the summer, so the full impact won't be felt until next year. Mainly because of that, net farm income for 1987 is expected to decline. This does not take into account the $1 billion in assistance to grain and oilseed producers promised by the Prime Minister.
- Number three: All the provinces show an increase in farm cash receipts over last year. But that's not great news for Alberta and Saskatchewan, where cash receipts last year were already low because of the drought.
- And number four: This year's farm income total reflects, to a large degree, increased spending under government programs. Revenues from the marketplace have increased for livestock, but the same is not true of grains.

Payments from government programs now represent 14% of total farm cash receipts.

In 1985, farm cash receipts derived from government programs added up to $2.1 billion. For 1986, the level is expected to grow by another $700 million. And next year the level will also be high.

What we're seeing is the federal government - and in many cases, provincial governments - taking a greater role in the financial well-being of the agriculture industry. The record of this government over the past two years is second to none. For example:

- Livestock producers needed greater stability. The federal government was the leading force in establishing tripartite stabilization.
- The Prairies were hit by consecutive years of drought. The federal government responded with consecutive years of drought assistance.
- Dairy producers needed the assurance of future stability. The federal government responded with a five-year, $1.5 billion dairy program.
- When farm finances became a major problem, the federal government responded with an $80-million interest rate relief program. And farm fuel tax rebates. And Farm Debt Review Boards.

And the Commodity-Based Loan Program, which represents close to half of all new FCC lending. And the Shared-Risk Mortgage Program, which represents 13% of all new lending under the Farm Credit Act.

And the Canadian Rural Transition Program. The interest level is high, and three out of four applications on average are being approved.

And this government will keep on doing what has to be done. Grain and oilseed farmers need help. We're going to deliver it.

That means $1 billion worth of additional help for farmers who have been hurt by the international subsidy war. And you'll hear more about that billion-dollar commitment tomorrow.

But this assistance - while it is substantial - does not deal with the root of the problem. And that is, huge surpluses and massive subsidies.

I'll tell you this, though: The EEC and U.S. treasuries may be big, but they're not bottomless. One day - and, I hope, soon - they're going to realize that high support prices and export subsidies don't work.

The U.S. has not won major new market shares for wheat. They've been losing market share for wheat in recent years, and there's little evidence that their export enhancement measures have changed the situation very much.

Yes, the high subsidies have succeeded in lowering world prices. But they have not - and they will not - succeed in pushing Canada out of business.

We're not even going to blink.

Our farmers are as efficient as anyone in the world. We have a natural competitive advantage because of our soil, and our climate. And because of the quality of our grain, and the quality of the farmers who produce it.

There's only one sure way to get customers and keep customers. You start with a high quality product. You develop a reputation as a reliable supplier. And you offer a competitive price.

That's what Canada is doing. And we're not going to back away from our markets. Not one bit.

Canada's agriculture industry is competitive, and we're going to become even more competitive. That's a challenge to governments.

And it's a challenge to the industry - the challenge of a lifetime.

We will build our export potential with aggressive marketing. And we will build toward greater competitiveness with the tools of research. And technology development. And technology transfer. And soil conservation. And other measures that lower the cost of production.

And we will do it together. That is the commitment federal and provincial governments have made with the new National Agriculture Strategy.

Yes, our approach requires more imagination than you need to pile one subsidy on top of another. But time will prove us right.

When this insane subsidy war is over, Canada will still be there, doing what we've always done best - supplying a high quality product at a competitive price.

But the Government of Canada is not sitting back, waiting for the dust from the subsidy war to settle. We're in there as leaders - leaders in the battle to end the war.

- I've travelled to Brussels and Washington to press Canada's case on both sides of the subsidy war.
- Prime Minister Brian Mulroney succeeded in making agricultural subsidies a priority issue at the Tokyo Economic Summit last May.
- Here in Canada, the Minister of State for the Canadian Wheat Board, Charles Mayer,

reached agreement with major agricultural exporting nations – agreement on the need to deal with agriculture in the negotiations under the General Agreement on Tariffs and Trade (GATT).

- He also represented Canada in Australia last August, where 14 nations discussed agricultural trade problems.
- And finally, Canada sent a strong delegation to Uruguay for the meeting that launched the new round of trade talks under the GATT. We took a lead role in pushing successfully for comprehensive inclusion of agriculture in the new round.

That is our record at the international level. It's a strong record. And we're going to keep pushing.

Agriculture is responsible for between a quarter and a third of this country's total trade surplus. And the Government of Canada is not about to forget it.

Believe me, we understand the importance of agriculture, and the seriousness of the difficulties our industry faces. The Prime Minister is very much aware of the problems. We discuss them at length, and we discuss them often.

That's why the federal government has put agriculture at the top of its list.

We gave it priority in the Throne Speech, and at the First Ministers' Conference.

We are giving it priority at the international level, and through the introduction of many initiatives.

And we'll continue to do so in the future.

Because whether the news in agriculture is good or bad – or some of both – the Government of Canada is in for the long haul, working with you today, toward a stronger tomorrow.

THE COMPETITIVE POSITION OF CANADIAN AGRICULTURE[1]

George L. Brinkman[2]

In the past few years, Canadian farmers have experienced a very significant change in the financial environment of agriculture. This change has brought decreasing prosperity and hardships to a number of farmers and caused people throughout the entire system to wonder about the competitiveness and future viability of the Canadian agricultural sector.

The competitive position of Canadian agriculture as the theme of this outlook conference is particularly important today because of the growing internationalization of agriculture and increasing competition for markets by countries around the world. Today Canadian farmers are influenced not only by our own domestic policies, but by the domestic and trade policies of others as well. Most Canadian farmers, for example, are now well aware of the effects of the 1985 U.S. farm bill and EEC subsidization policies which have contributed to substantially reduced international grain prices. These international impacts are particularly important to Canada as we have one of the most trade dependent agricultural sectors in the world. Canada, for example, earns about half of every dollar of agricultural sales from exports, compared to roughly one-fourth for the EEC and one-fifth for the U.S. Furthermore, Canada has a relatively small domestic market, which limits our opportunities to turn inward exclusively to our own consumers. We may be able to support a few commodities within our domestic market, but we simply cannot absorb our entire production within our own borders. As a result, Canada is dependent on the international competitiveness of agriculture for not only the viability of farming, but for the survival of the entire sector.

This paper provides an assessment of the competitiveness of Canadian agriculture. It begins by defining competitiveness and distinguishes it from related but different terms. Next, both domestic and international factors affecting competitiveness are identified, followed by an assessment of recent changes in Canada of general factors affecting Canadian competitiveness. The current competitiveness situation for individual commodities is then summarized along with outlook projections for the next few years. The paper then ends with some conclusions about Canadian competitiveness and policy implications.

JUST WHAT IS COMPETITIVENESS

There are many different concepts and definitions of competitiveness. In the strictest sense, competitiveness refers to the ability to win or achieve some goal. In agriculture, this typically refers to being able to sell our products in place of those from another country. In this context, however, there are two definitions of competitiveness. The first definition looks at competitiveness as the ability to outsell another nation in either domestic or foreign markets under whatever circumstances are necessary. The extent of competitiveness under this definition is measured as market share, as the proof of competitiveness is seen in actual sales. Under this definition, competitiveness can be "bought" through the use of subsidies and government intervention, even if domestic farmers are not low cost producers.

The second definition identifies competitiveness as the ability of a nation to produce and distribute goods and services in the international economy in competition with goods and services from other countries and in a way that earns a rising standard of living for the country. This definition considers alternative uses of resources (including government subsidies) in measuring competitiveness and does not include sales at *any* cost. In many cases where competitiveness is "bought" by massive government subsidies, the competitiveness is a false competitiveness because the government funds used for these subsidies could create greater benefits in other uses throughout the economy. In other words, Canada may lose sales to other heavily subsidized countries, but may still be a more competitive producer from a true cost standpoint. In this regard it may be useful to examine competitiveness with and without government subsidies and intervention.

Competitiveness seems easy enough to understand but it is often confused with related but different concepts. Competitiveness, for example, is not the same as production capacity, productivity or profitability. Yet all of these factors are highly related to competitiveness. Productive capacity helps determine the domestic supply of products, but domestic demand also must be considered in determining the quantity and prices of exportable or importable products. Productivity measures the rate of conversion of inputs into outputs in a country and thereby provides a measurement of technological efficiency. Technology and productivity by themselves, however, do not determine competitiveness, as costs, prices and other factors also must be considered. Profitability is associated with competitiveness, but increased competition may decrease profitability, and decreased profits may be necessary to increase competitiveness.

Competitiveness is also related to but not synonymous with trade. First, trade depends on competitiveness, but it is comparative advantage rather than absolute advantage that determines trade. Countries will produce and trade commodities for which they are *not* the most competitive in terms of having the lowest costs of production as long as this commodity is relatively more profitable for them to produce than other commodities. They will then gain more by specializing in the production of this commodity and trading it to generate foreign exchange to buy other products which are relatively less profitable for them to produce.

Another consideration is that we should not confuse competitiveness with combativeness. Combativeness occurs when countries engage in trade warfare with each other, sometimes with increasing levels of subsidization. If each combatant matches the other's concessions to maintain its markets, little change in relative competitiveness occurs. In the present environment, we are likely to see greater combativeness than changes in competitiveness, as many of the major exporting countries are likely to maintain their production levels either through government assistance or through adjustments in returns to farmer provided resources.

It also should be noted that competitiveness relates to farmers and not entire sectors, as every sector has some producers who are more competitive than others. The competitiveness of individual farmers determines the volume that a country can sell, rather than whether an entire sector is competitive or not. Our agricultural sector can remain competitive under different product prices, but for different volumes of production. Furthermore, competitiveness is not a static concept and is constantly changing in response to changing conditions to the international system. The process of remaining competitive therefore is a process of adjustment to these changing forces.

FACTORS AFFECTING COMPETITIVENESS

Competitiveness is the result of a complex set of domestic and international factors. Some of the more important factors are listed below. These factors may change in relative importance over time, but no single factor by itself determines competitiveness.

DOMESTIC FACTORS
- Farm Level
  - Resource Endowments
  - Capital Stock
  - Technology
  - Management
  - Productivity
  - Input Costs and Returns to Farmer Provided Resources
  - Farm Structure
  - Quality
  - Comparative Advantage

- PDR Level (Transportation, Storage, Processing, Distribution and Handling)
  - Resource Endowments
  - Technology
  - Wage Settlements and Input Costs
  - Size of Operation
  - Quality

- Consumer Level (Demand)
  - Population
  - Income and Income Distribution
  - Tastes and Preferences

- Government Level
  - Subsidies
  - Taxes
  - Regulations
  - Institutions
  - Services
  - Domestic Policies

INTERNATIONAL FACTORS
- Exchange Rates
- Trade Policies
- Government Intervention
- Merchandising Capabilities
- Transportation and Distribution

In assessing competitiveness at the farm level, a number of factors are important. First of all, resource endowments (land, climate, people, etc.), capital stock, technology and management capabilities determine what can be produced and how. The efficiency of the production process in converting inputs into outputs is referred to as physical productivity. In measuring competitiveness, however, we also must account for costs of inputs, as rising input costs can offset technological productivity. Input-output productivity together with input costs determine the cost of production, which in turn serves as one of the components of competitiveness. Costs of production can be affected on the productivity side by the development of improved technology through agricultural research and on the input cost side by changes in domestic price levels (inflation), returns that farmers are willing to accept for farmer provided resources, and interest rates. Quality of production and specialization due to comparative advantage also may be important in determining competitiveness.

Since most food is not consumed in raw form at the farm gate we must also consider the contribution of the processing, distributing, and retailing sectors to the competitiveness of agricultural products. The final price of the product can be influenced by transportation costs through the cost of fuel and legislated freight rates, as well as by the efficiency of the processing and distribution sectors. Differences in efficient size of plant and wage settlements between countries can therefore affect our competitive position.

Consumer considerations often are overlooked in assessing competitiveness, but they can be just as important as production considerations. Throughout countries of the world, population size, income levels, and tastes and preferences determine what and how much consumers want, and how much they are willing to pay for it. Since the amount a country exports or imports is based on the *difference* in domestic supply and demand at any given price, demand considerations are necessary to determine both the volume of exports or imports and the overall size and nature of the market. These considerations in turn are important in determining competitiveness because producers in different countries may have different marginal costs of production for different products and different production levels. A country, for example, may be very competitive at small levels of production, but lose this competitiveness at larger volumes of production because its producers have limited capabilities to expand production at the same low costs.

Government policies can also have a pronounced effect on competitiveness by improving productivity or changing costs. Government activities in research, grading, and meat and produce inspection affect the productivity in production, the efficiency of marketing, and the magnitude of final demand. Monetary and fiscal policies affect inflation and interest rates. Regulations and special requirements such as those for chemical registration and environmental protection, labelling, health and safety, etc., also affect production and product costs. In addition, domestic subsidies and taxes adjust chargeable costs to lower or higher levels and thereby affect competitiveness. Subsidies and taxes, however, are transfers of costs to (from) taxpayers from (to) producers and PDR operators, rather than net adjustments in these costs, so they do not necessarily represent changes in the overall costs of production.

At the international level, one of the most important factors determining competitiveness is exchange rates. Exchange rates are determined by the demand and supply of one currency relative to another and are based primarily on the relative strengths of each country's economy. In some cases, governments also intervene with policies to strengthen or adjust their exchange rates. As exchange rates for a country fall relative to other countries, its exporters become more competitive because the price of their commodity becomes cheaper in terms of the currency of other countries. In a similar fashion, imports become relatively more expensive, so that producers of import competing products also become more competitive.

International competitiveness also may be affected by government intervention and international transportation costs. Trade policies, such as tariffs, import quotas, export subsidies and related programs can affect the price of products and the quantity that can be traded. Distances and transportation costs to potential markets also will affect the final competitive price in the buying country. As such, some countries may be more competitive than others simply because they are located closer to a particular market. In order to compete with closely located competitors, other countries will have to accept lower returns to resources and/or have lower domestic costs of production and distribution. Important merchandising factors include the reliability and promptness of delivery, quality and product differentiation, and financial and credit considerations.

In examining these factors affecting competitiveness, some of the most important for Canada today are exchange rates, domestic and foreign government support policies, productivity changes in both the farm and PDR sectors, input costs, and returns to farmer provided resources. In recent years, exchange rate adjustments have been the most important factor in maintaining Canada's competitive position, as Canada's weakening exchange rate relative to the U.S. and recently relative to European currencies has provided Canada with substantial cost advantages internationally. Productivity changes also have been very important, but other countries have made substantial gains in productivity as well. In this regard, we have had to make productivity gains just to keep up with our major competitors. Productivity changes and changes in land values represent long run determinants of competitiveness, while government intervention and changes in returns to farmer-provided resources may be used to help determine competitiveness in the short run.

Exchange rates, returns to farmer-provided resources and land values also take on special significance as adjusters in the system. At the international level, exchange rates adjust and moderate a country's competitiveness by changing in the same directions as changes in strengths or weaknesses in a country's economy. For example, as a country's economy strengthens in competitiveness, this increases the demand for its currency and strengthens its exchange rate. Strengthening the exchange rate, on the other hand, reduces competitiveness and counteracts some of the gains from increasing economic strength. Likewise, a weak economy may reduce the exchange rate, which in turn will help improve the competitive position of exporting and import-competing industries and thereby help to strengthen the economy.

As competition from other countries increases, domestic producers also may maintain their competitiveness by reducing returns to their resources. For farmer-provided resources this will depend on the willingness of farmers to accept lower returns to their labor and capital and their ability to survive in agriculture under lower returns.

Over time, reduced returns to resources also tend to become reflected in lower land values. Domestically, land values are determined, to a large extent, by the residual returns after accounting for all other costs of production including returns to human resources. These returns get capitalized into land values, helping to establish land costs. As competitiveness decreases from higher costs, lost markets or other causes, reduced profitability tends to get decapitalized into lower land prices, thus re-establishing a competitive equilibrium. Likewise, as profitability rises from increased competitiveness, land values also will increase, thereby adjusting competitiveness back downward. Land value adjustments may take considerable time to work through the system as actual costs, however, so that these adjustments tend to be long term corrections for competitiveness. Nevertheless, changes in land values can have a significant long run effect in moderating changes in competitiveness and thereby maintaining a country's long run competitive position.

A CLOSER LOOK AT CANADIAN AGRICULTURAL COMPETITIVENESS

This section begins with a summary of recent changes in exchange rates, productivity, interest rates, and land values to provide a background for examining the competitiveness of Canadian agriculture. This background material is then followed by an assessment of individual commodity groups.

SOME RECENT CHANGES

Exchange rates

Canada's competitive position has been affected in recent years by changes in a variety of factors. Figure 1, for example, illustrates the changes in exchange rates for selected countries relative to Canada over the 1977 to 1986 period. From 1977 to 1980-81, the Canadian dollar weakened relative to currencies of the EEC (represented collectively by the ECU), the U.S. and Australia, thereby providing us with a competitive edge. Since 1980-81, the U.S. exchange rate has continued to strengthen relative to Canada, further assisting the competitiveness of Canadian products relative to those from the U.S. Canada's currency, however, has weakened substantially relative to the Australian currency since 1980, and again the ECU until 1985. Since 1985, EEC currencies have been strengthened greatly against both the U.S. and Canadian dollars, which should now assist U.S. and Canadian producers in competing with the EEC.

Figure 1 also illustrates the role that exchange rates have played in precipitating the present trade war between the U.S. and the EEC. The widening difference between the U.S. and EEC currencies (ECU) between 1981 and 1985 helps explain the increasing competition of the EEC and loss of U.S. markets due to relatively cheaper EEC products. This loss of markets, in particular, is one of the underlying factors in the development of the 1985 U.S. farm bill. It also should be pointed out that the relative strengthening of the EEC currencies brought about by cooperative agreement since 1985, should help U.S. producers regain some of their competitiveness. This increase in exchange rate competitiveness, however, is being offset by additional EEC export subsidies.

Productivity

Productivity can be measured many ways. Often we examine productivity as yields per acre or output per man hour. These measures, however, can be very misleading because improvements may be accomplished with tremendous increases in other inputs, such as fertilizer and machinery, which add to costs of production. An alternative measure of productivity which incorporates changes in output relative to all inputs is called multifactor productivity. This measure is more comprehensive and reflective of overall changes in competitiveness because it accounts for the substitution of one factor of production by another.

Unfortunately, comparable measures of multifactor productivity across many countries are not readily available. Figure 2 provides a comparison between Canada and the U.S. since 1962. From this figure, it is apparent that overall multifactor productivity in the two countries has increased at roughly the same rate. Since 1977, however, it would seem the U.S. have had a slight edge, particularly considering the large drop in 1983 due to the unusual drought throughout the U.S. corn belt. It also should be pointed out that these measurements are for the entire agricultural sector and not individual commodities. Data are not available for individual commodity calculations, but greater differences in relative productivity growth by commodity may be present.

Interest rates

Differences in interest rates are presented in Figure 3. Among countries listed in Figure 3, Canada has had some of the highest interest rates in recent years. Canadian interest rate policies therefore have helped reduce Canadian competitiveness in recent years, as only in 1985 did Canadian rates fall below those of most of its competitors.

Land values

In general, land values in Canada are slightly lower than in the U.S. and considerably lower than in Europe. Land costs in some of the newly developed areas in South America (Brazil, Argentina), on the other hand, may be lower than in Canada. Changes in land values over time reflect changes in competitiveness. Relative changes in land values, since 1973, are plotted in Figure 4 for Canada, the U.S., and France. Throughout the late 1970s, land values in Canada increased at a faster rate than in the U.S., but they also have fallen slightly faster since. France as an important European producer, had slower increases in land value than the U.S. and Canada, but also experienced slower declines in the 1980s. The greater relative increase in land values in Canada than in the U.S. since 1973 should contribute toward decreasing Canada's long run competitiveness relative to the U.S., although the declines since 1980 should help offset these changes somewhat.

COMPETITIVE SITUATION AND OUTLOOK BY COMMODITY

Making future projections is always a precarious task, but projecting the future competitive position of different Canadian producers is particularly difficult because of the many factors involved. One of the greatest difficulties is trying to anticipate changes in agricultural and trade policies by the U.S. and the EEC. On the one hand, if the current reduction in world prices and subsequent increase in EEC subsidy costs causes them to reduce subsidy levels and thereby reduce production, Canadian producers could benefit by expanded markets and increased prices. On the other hand, the ineffectiveness of the U.S. farm bill to reduce U.S. stocks and the tremendous cost of this policy also could cause the U.S. to re-evaluate its policy. Alternative approaches for the U.S. might then include a) complete protection of and reliance on the domestic market, and b) two price systems. The probability of these policy changes is very difficult to predict. For this reason the following assessment of Canadian competitiveness will be based primarily on production and cost factors as they affect Canada's relative competitiveness.

Wheat

The Canadian wheat sector basically is a mature, stable system, operating in a world market with excess capacity and extensive government intervention. Over the years, Canada has developed a niche in world trade as a major exporter of high quality bread and durum wheat, although some efforts have been undertaken to develop inroads into less traditional developing-country markets where price may be more important than quality. Canadian wheat production is supported by a grading and marketing system with some of the strictest standards in the world, monopolistic selling through the Canadian Wheat Board, and a relatively modern but sometimes fragile and inadequate grain handling and transportation system.

Presently, Canada should be regarded as a competitive wheat exporter, particularly under a definition of competitiveness that incorporates an opportunity cost for government subsidies. Table 1 summarizes costs of wheat production for Canada, the U.S., and selected EEC countries. This table shows relatively lower costs for Canada that the other countries examined, particularly at July 1986 exchange rates. This table also shows how changing exchange rates may affect competitiveness, as the difference in applying 1984 and 1986 exchange rates to the 1984 domestic costs represents the equivalent of a 34% decrease in costs relative to France and a 41% decrease relative to Germany.[3]

In interpreting this table, some cautions must be expressed about costs of production, as they are always difficult to calculate. So much depends on what costs, whose costs, and the measurement procedure utilized. Deriving comparable costs of production across countries is even more difficult. Furthermore, costs of production for a given year represent only a snapshot of time. In the long run, costs of production tend to adjust through changes in returns to farmer-provided resources and land costs to reach similar levels among competing nations.

The competitiveness of Canadian wheat production is also supported by a recent U.S. study (12), which concluded that Canada, along with Argentina, had some of the lowest average production and marketing costs among major wheat exporters, even compared to the U.S. This same study also indicated that the Canadian Wheat Board had advantages in exporting wheat because of its monopolistic control over supplies, secrecy in prices and negotiation, ability to arrange export credits and ability to conclude long-term agreements.

Despite the strengths reported in the U.S. study, Canadian wheat producers should be concerned about their long run competitive position. First of all, Canada's competitive position in recent years has been maintained primarily by declining exchange rates (at least relative to the U.S.) and relatively low land costs, rather than through improvements in productivity. Since 1970, yields per acre have increased at an annual average rate of only 0.1 bushel per acre for Canada, compared to 0.2 bushel per acre for Australia, 0.5 bushel per acre for Argentina and the U.S., and 2.1 bushel per acre for France (5). Some of these differences can be explained by higher producer prices, especially in the EEC, but institutional rigidities in Canada also have been important. Limited progress in productivity gains in Canada can be related to Canada's restrictive variety licensing and chemical registration policies, and lack of plant breeders' rights reducing private research. Other concerns include Canada's grain handling system, which has again proven unreliable as powerful unionized work forces institute strikes and work stoppages (such as those recently instituted for Great Lakes shipping). High interest rates designed to prevent capital outflows also have disadvantaged wheat producers by increasing farmers' borrowing costs. Furthermore, the present grain system is considered by some in the grain industry to be cumbersome and unable to change quickly. The restricted adaptability of the system leaves Canada's wheat sector very vulnerable to possible changes in demand for our high quality wheat because of changes in taste and technology.

The future competitive position of Canada depends both on what Canada does and the actions of other countries. These countries include both exporters and others who affect the overall international balance through their own production and consumption. For brevity, however, I will only address activities of our competitors for exports. European countries and particularly France, for example, have made large increases in yields per hectare in recent years, and additional improvements from biotechnology are coming on stream. These productivity gains should help increase their production and competitiveness. The recent strengthening of European currencies relative to the U.S. and Canadian dollars, on the other hand, should reduce their true cost competitiveness. Unfortunately, these countries may offset these exchange rate adjustments with additional government subsidies to maintain sales. As a consequence, the future competitiveness with European countries will depend primarily on the willingness of the EEC to subsidize its producers.

The U.S. is also a major competitor seeking to market excess production in wheat. Currently, the U.S. has tremendous quantities of grain in storage and substantial excess capacity in surplus land set aside from production. In recent years, domestic U.S. policies regarding their loan rate, acreage diversion, and grain storage programs have supported artificially high international prices and encouraged greater production world wide. These policies and the strong American dollar have cost U.S. producers losses in world market share and prompted a very competitive and even combative orientation in U.S. policy. As a result, the U.S. is attempting to regain lost markets by driving high cost international producers out of production and capturing markets with special concessions and subsidies. U.S. producers also have experienced (and likely will continue to experience) greater increases in wheat productivity than Canadian producers. As a result of these factors, Canada is likely to see some increase in competition and substantial increases in combativeness from the U.S. in the future.

Other countries, such as Argentina and Australia, also may influence Canadian competitiveness, but they may be somewhat more limited than those from the U.S. or EEC. Argentina is regarded as a low cost wheat producer, but it is limited in its capacity to expand production (5). Australia has greatly devalued its currency in recent years and could be a growing competitor, but its wheat exports tend to be regarded internationally as quite variable with domestic production, and therefore somewhat unreliable.

Given these changes by our competitors, it is widely felt that the greatest pressures on Canadian sales in the next few years are likely to come from subsidized exports from the EEC and the U.S. Both of these sources tend to have somewhat higher true costs of production than Canada (at current exchange rates) and therefore appear to be trying to achieve their advantage in selling wheat through higher subsidy levels. The Canadian Wheat Board estimates that the level of wheat subsidy in 1986-87 in Canadian dollars will be $0.85 per bushel for Canada, compared to $2.63 and $3.13 per bushel for the U.S. and EEC respectively. For barley, the subsidy levels are expected to be $0.33 for Canada compared to $1.06 for the U.S. and $3.11 for the EEC. These high subsidization rates pose a difficult dilemma for Canada as we have less capacity in our treasury to compete in a subsidy war with the U.S. and the EEC. As a result, we must examine what levels of support we can provide and what other opportunities are available to maintain Canadian competitiveness.

The most obvious alternative to public assistance for Canada is to try and improve our wheat productivity. This option, however, does not look too favourable, as our major competitors are likely to exhibit greater productivity gains than we are. I view Canada's capacity to improve productivity as limited by current policies and capabilities. This does not mean Canada will withdraw from the grains market, however, as we have a comparative advantage in western wheat production and few alternatives. As a result, I see our future competitiveness determined by the adjusters of competitiveness – exchange rates, rates of return to farmer resources, and land values. As long as exchange rates remain at their present value relative to U.S. and EEC currencies, we can maintain competitiveness in costs of production. However, we may still have to make further concessions in returns to resources and costs to compensate for subsidization by other countries. Given our more limited capacity to subsidize, we may very well find we must maintain our competitive position through further adjustments in farmer incomes leading eventually to lower costs, particularly for land. This can be a painful process as some farmers may not survive, but it may be necessary to maintain our long run viability.

Feed grains and oilseeds

Data on the relative competitiveness of feed grains and oilseeds is not as readily available as for wheat. What data are available indicate that Canada can compete with most countries under normal production conditions (see Table 2 for costs of production for corn), but that we are not necessarily the lowest cost producers. For example, the lowest cost producers of barley likely are the U.K. and France, while Brazil and Argentina likely are the lowest cost producers of soybeans. Ontario corn production may not be as competitive as some of the top areas of the corn belt, but we can compete with the bulk of U.S. corn production.

Canada's competitiveness in feed grains and oilseeds is influenced by many of the same factors as for wheat, including technical productivity, prices of operating inputs, interest rates, grain handling (and oilseed crushing) costs, domestic land values, and exchange rates. Most of these factors have had similar impacts, as for wheat, but productivity increases have been greater in feed grains and oilseeds because of fewer restrictions on variety licensing and the combined effect of yield increases and crop substitutions. For corn production, for example, there have been significant increases in yields. However, the biggest impacts have occurred by developing shorter season hybrids and expanding corn acreage – thereby substituting higher yielding corn for lower yielding small grains.

In the future, Canada likely will see increasing competitiveness in feed grains and oilseeds, particularly from recently or newly developed areas of production from Brazil and other countries like Argentina. Feed grain and soybean production in the U.S. is well established and not likely to see substantial increases in acreage. We could see increasing competition from the U.S. in oilseeds from the introduction of canola as a winter crop in the U.S., however. Until recently, rapeseed was not an acceptable crop for use in the U.S. because of concern about erucic acid and glucosinolates. With our development of rapeseed varieties (canola) with "zero" levels of these compounds we have been successful in getting U.S. approval of this crop. While we stand to gain in the short run from sales to the U.S., we also stand to lose in the long run from greatly expanded production in some of the southern states as a very low cost second crop grown during the winter. Currently, at the University of Guelph, we are receiving requests from U.S. scientists for winter canola cultivars which we have developed for Canada. At present, these cultivars are not yet perfected for Canadian conditions because of inadequate winter hardiness, but they likely would perform very well in the U.S. Needless to say this presents a significant dilemma for Canadian producers and scientists, as our policies to get approval of canola in the U.S. could also reduce our long run competitiveness in oilseeds.

Livestock

The competitiveness of Canadian livestock production is influenced by many of the same factors as grains, as feed costs represent up to two-thirds of the costs of some forms of livestock production. In addition, quality differentials, processing and slaughtering costs, and additional barriers to trade can be important.

Of the major livestock commodities produced in Canada, we appear to be most competitive in hogs and pork. With competitive feed costs and farm operations, we are quite competitive at the farm level. In slaughtering and processing we are slightly less competitive than the U.S. because of higher wage settlements and smaller sized operations, but some of our more modern hog processing plants are quite competitive in size of operation. In addition, we have higher quality pork than the U.S., primarily as a result of our grading system. The close proximity become less competitive with producers in other countries who do not have these costs. These differences are particularly pronounced for Canadian and U.S. producers of broilers.

In the future, our competitiveness in livestock will depend on relative grain prices and other costs (including the opportunity costs of labor), exchange rates, foreign production and trade barriers. I see Canada maintaining a relatively strong competitiveness in hogs and pork because of feed grain and exchange rate advantages.

However, we are likely to see large production increases in the next year or two in the U.S. in response to present hog prices and low grain prices in the U.S. Beef competitiveness, although somewhat less, is likely to be maintained for the Canadian market through long run land cost adjustments, as limited opportunities exist for alternative pasture land in western Canada. In addition, limited opportunities for labor returns in some areas of Canada compared to those in parts of the U.S. and Europe may maintain labor commitments to beef production in these locations. For poultry and dairy, the increasing degree of capitalization of benefits into quota values likely will continue to decrease our true competitiveness in these products, but we may continue to maintain our sales of such surplus products as skim milk powder, as we appear willing to dispose of this commodity at nearly any cost.

Fruit and vegetables

Competitiveness in the fruits and vegetable sector is affected by a wide variety of factors and varies considerably by commodity. For most commodities our main competitor is the United States. In many cases, our production is disadvantaged by shorter growing seasons and lower yields. For some commodities, our land values, especially those in the Niagara peninsula and in B.C., are also higher than in the U.S. On the processing side our raw products tend to be higher costs because of marketing boards. Canning operations often are not as efficient as U.S. plants, but our freezing operations tend to be more modern than our canning operations, and therefore much closer in efficiency with the U.S. Our freezing operations tend to be newer plants, however, and may therefore have higher debt. On the plus side, Canadian quality generally is comparable to the U.S., and we have a cost advantage in our markets due to transportation costs from the U.S. and our exchange rate.

Given these considerations, we tend to be competitive in the production of fresh apples, onions, carrots, rutabagas and potatoes, and a variety of frozen vegetables. We are less competitive and sensitive to imports of asparagus, strawberries, tender fruits, tomatoes and canned fruit.

With many of our other commodities, our competitiveness in fruits and vegetables depends primarily on our exchange rate. Furthermore, these commodities, especially processed products, are often more sensitive to exchange rates than other commodities. Some, for example, may lose their competitive position from as little as a 5 to 10% strengthening of exchange rates relative to the U.S. As a consequence, our future competitiveness here likely will depend on our future exchange rates.

CONCLUSIONS AND POLICY IMPLICATIONS

First of all, Canada is a competitive producer in a number of products and is likely to remain competitive in the future. Some products, like processed fruit and vegetables are more vulnerable (especially to exchange rate changes) than others, but the bulk of our production will continue to be produced competitively. This is particularly true for grains (especially western grains), oilseeds, pork and beef cattle. For many of these products we have a comparative advantage and few alternatives, so we will continue to produce them, even under lower prices, as at present. Our competitiveness, on the other hand, will be maintained in the short run through a mix of exchange rate adjustments, government assistance, and changes in returns to farmer provided resources. In other words, with falling prices, we may adjust our production slightly by some marginal resources being taken out of production, but we likely will continue to produce the bulk of our production in those areas where we have few alternative uses for the resources. We also are likely to ensure our saleability of product in the short run, either by being competitive through exchange rates and government assistance, or through lower returns to farmers. In the long run we also may affect competitiveness by changes in productivity, merchandising ability and land values.

From a policy standpoint, the crucial decision is what mixture of exchange rate adjustments, government assistance, and changes in returns to farmers are going to be necessary and will be acceptable for Canada. Given our present exchange rates, we have opted for a mixture of government assistance and farmer adjustments. Some farmers have expressed concern that Canadian governments have not provided enough assistance to help them sufficiently in the present crisis. It is very important to point out, however, that the federal and provincial governments in Canada have been very active in providing support. In 1985, for example, these governments provided about $2.2 billion in various direct payments to farmers, representing the equivalent of about 52% of the 1985 aggregate net farm income. In 1986, direct payments initially were expected to be about $2.8 billion, even before the announcement of the additional $1 billion in assistance for grain farmers. Governments have not turned a deaf ear to the plight of farmers, but they are seriously limited in their capabilities to provide more assistance because of budgetary and fiscal constraints. The fact that government assistance has not been able to prevent farm financial problems simply indicates the size of the problem, as the current financial crisis is so large that it may be beyond the fiscal capability of governments by themselves to solve by subsidies and public assistance. Under these circumstances, some farmer adjustments will be necessary. Canadian agriculture will remain competitive because it will adjust automatically over time. Some individual farmers, on the other hand, may not remain competitive, and may be forced out of agriculture.

Secondly, we need to establish internationally less combative policies in our pursuit of competitiveness. The current trade war between the U.S. and the EEC now appears to have achieved very few gains in market share for the U.S. as other countries have simply maintained their production (like Canada) through exchange rate adjustments, government assistance and lower returns to farmers. In many cases the real losers have been producers in other countries like Canada. Furthermore, since the USSR is one of the few countries currently willing to buy grain with hard currencies, the trade war forces the U.S.'s chief allies to compete destructively with each other in order to sell to its chief adversary, the USSR. Clearly there is a very strong need to work in international councils, like the upcoming GATT negotiations, to bring about mutual disarmament in combative trade policies.

Third, it is now apparent that exchange rates and other macroeconomic policies have been the most important factors in maintaining Canada's competitive position in recent years. In today's agriculture, exchange rates and other such macroeconomic policies as interest rates, inflation, trade arrangements and taxation can be at least as important and often more important than commodity policy in affecting the viability of agriculture. Canadian farmers and their organizations have done a good job in developing good linkages with Ministers of Agriculture, but they have been very slow to approach Ministers of Finance, Revenue, and External Affairs about macroeconomic and trade policies. In the future, farmers must recognize that they may need to become actively involved in influencing (rather than only reacting to) these policies just to survive, as changes in macroeconomic and trade policies now can affect farmers more than traditional commodity policies.

Finally, I would like to comment on the importance of agricultural research and other high payoff public expenditures. It is unfortunate that agricultural research in Canada has come under so much criticism in recent years because it too has played a very prominent role in maintaining Canada's competitiveness. This is not to say we cannot do things to improve our overall research performance, but evaluations of past research (2, 11) indicate that these expenditures have generated some of the highest payoffs for public funds throughout Canada. These returns have been measured by benefit cost ratios of up to 40 to 1 and higher, and internal rates of returns consistently in the 30 to 60% range. In large countries like the U.S., where production increases affect world prices, research benefits eventually are passed on to consumers as lower prices. In a small country where we do not affect international prices appreciably, on the other hand, research benefits instead get passed on to producers as lower costs. As such, they become one of the most effective long term policies for maintaining competitiveness and returns to farmers. Other high payoff expenditures include grading and meat inspection, generating benefit cost returns around 10 to 1. Because of these high returns and impacts on competitiveness, it is important for Canada to maintain its support for these activities in order to achieve a long run competitive agriculture.

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[1] Paper presented at the 1986 Canadian Agriculture Outlook Conference, Ottawa, Ontario.

[2] Professor, Department of Agricultural Economics and Business, University of Guelph.

[3] This procedure overestimates the difference in costs in Canadian dollars between Canada and other countries under the 1984 and 1986 exchange rates as changing the exchange rates also would change some of the domestic costs. For example, some of the benefits from a weakening Canadian exchange rate in terms of increasing foreign costs (measured in Canadian dollars) also would be offset by increasing prices in Canada of inputs like petroleum products that are priced in the international market.

TABLE 1. WHEAT COST OF PRODUCTION IN CANADIAN DOLLARS PER BUSHEL

Country	Canada (Alberta)	U.S.		U.K.	France*	W. Germany**
Year	1984	1983	1984	1984	1983	1983
Bushel/acre	30.5	36.9	35.4	113.5	101.0	64.3
Cost at 1984 exch. rates						
Variable costs	2.34	1.89	2.01	1.33	1.19	3.09
Total costs excl. land	3.00	3.90	4.17	2.50	N/A	N/A
Total costs incl. land	3.83	5.08	5.31	3.25	3.78	N/A
Total costs incl. land at July 1986 exch. rates	3.83	5.43	5.66	3.57	5.07	4.35

* Seine-et-Marne Independent Farmers

** Spring Wheat

Source: Canada figures derived from L.J. Andruchow, *Costs and Returns for Crop Production in Alberta*, (1) and other data from B.F. Stanton, *Production Costs for Cereals in the European Community (14)*.

TABLE 2. CORN COSTS OF PRODUCTION IN CANADIAN DOLLARS PER BUSHEL

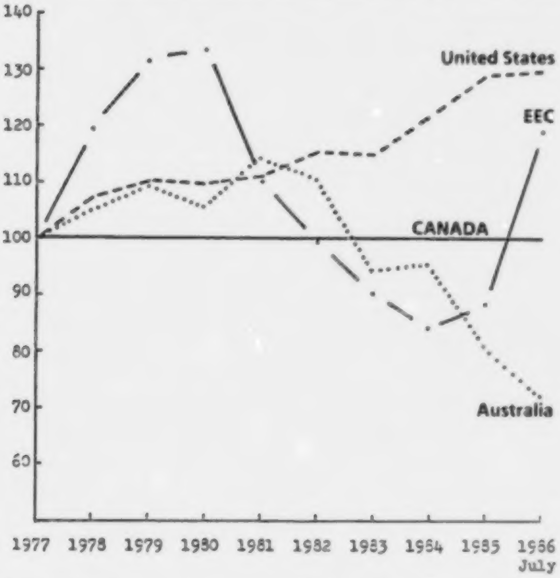
Country	Canada (Ontario)	U.S.	France*	Italy**
Year	1984	1984	1983	1983
Bushel/Acre	94	105	116	147
Cost at 1984 exch. rates				
Variable costs	2.16	1.64	1.72	1.49
Total costs excl. land	3.01	2.90	N/A	4.40
Total costs incl. land	3.91	3.50	4.07	4.88
Total costs incl. land at July 1986 exch. rates	3.91	3.74	5.45	6.18

* Seine-et-Marne Independent Farmers

** Centro Veneto, Northern Italy

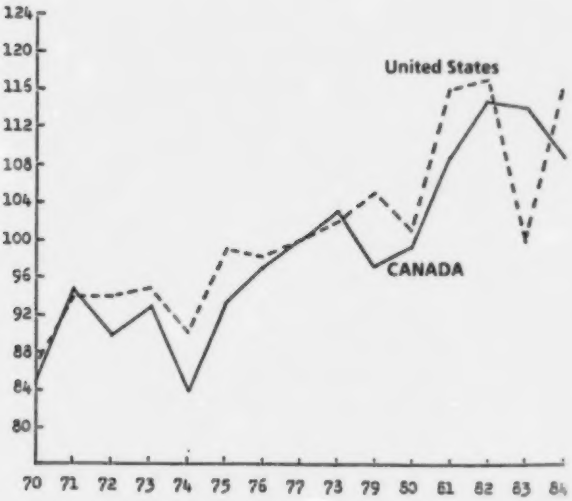
Source: Canadian data from Ontario Ministry of Agriculture and Food, *Grain and Forage Crops Estimated Production Costs for Ontario, for Crop Production in Alberta*, (5) and other data from B.F. Stanton, *Production Costs for Cereals in the European Community (14)*.

FIGURE 1. INDEX OF RELATIVE CHANGE IN FOREIGN CURRENCIES COMPARED TO THE CANADIAN DOLLAR (1977 = 100)



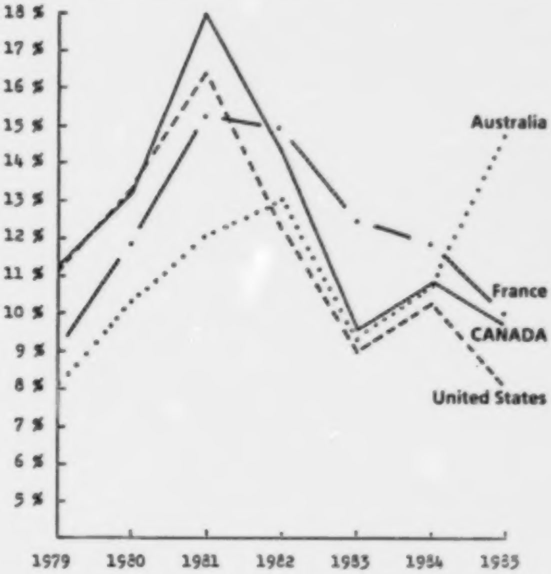
Source: (8, 10)

FIGURE 2. INDEX OF MULTIFACTOR PRODUCTIVITY CHANGE, CANADA AND THE U.S. (1977 = 100)



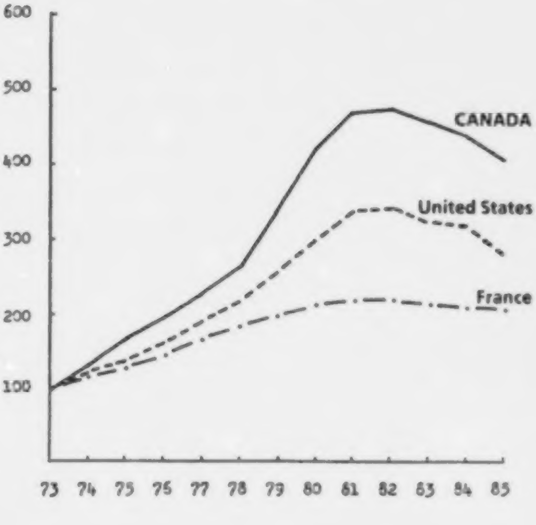
Source: Canadian data from (3) and updated with unpublished Agriculture Canada data. U.S. data from (7).

FIGURE 3. INTEREST RATES



Source: (10)

FIGURE 4. INDEX OF RELATIVE CHANGE IN LAND VALUES (1973 = 100)



Source: Canadian data from (15), U.S. data from (9), and data for France from (4 and 13).

LONG TERM U.S. AGRICULTURAL OUTLOOK

A. Womack

EXECUTIVE SUMMARY

The Food Security Act of 1985 (FSA85) has been evaluated using a ten-year forecast prepared jointly by the Food and Agricultural Policy Research Institute (FAPRI) and Wharton Econometric Forecasting Associates (WEFA). In the evaluation, foreign and domestic economies are presumed to grow moderately and U.S. macroeconomic policies are presumed to be successful in reducing the budget deficit. A major objective of the FSA85 is to reduce government involvement in domestic and international agricultural markets. FAPRI evaluated the FSA85 relative to this major objective and to four related concerns that influence the Act's design: export markets, farm income maintenance, government costs, and farm debt. Persistent problems with the U.S. agricultural sector are highlighted in the general policy conclusions, which include:

- Export markets grow at average annual rates of less than 5% for most agricultural commodities. This reflects short-term price inelasticity and growth in total export markets determined largely by income. Developing countries are rapidly becoming one of the most important components of the export market.
- Farm income is protected, but at high government costs. The primary factor influencing fluctuations in gross farm receipts during the ten-year evaluation period is due to the adjustment in the livestock industry in response to the artificially low feed prices in initial years. Farm expenses are reduced due to lower interest and energy costs.
- Direct government payments to farmers remain high throughout the evaluation period. This is attributed to the maintenance of target prices relative to low market prices resulting from the high initial stocks of major program commodities and to an export market tied in the short-run more to income changes than relative prices.
- Program management strategies which place first priority on reducing government controlled stocks may be ill-advised. It is difficult to operate stabilization policies such as those provided for in the FSA85 around market price objectives inconsistent with long-term equilibrium price expectations.
- A number of warning signs are emerging in the livestock industry, suggesting that artificially low feed prices in the short term may stimulate inventory build-ups that require significant future corrections.
- Farm debt will continue to be a concern for certain components of the U.S. agricultural sector. Target prices and the targeting in the FSA85 are not sufficient for effectively addressing this problem.
- Unless there are structural or policy changes in world export markets or a rate of income growth more rapid than employed in the ten-year policy analysis, the value of U.S. exports will reach 1984-85 levels only near the end of the evaluation period. Other approaches to export market expansion, not tied to domestic prices for major program commodities, merit consideration. Macroeconomic and trade policies leading to growth in the total export market will benefit U.S. agriculture significantly.

INTRODUCTION

Export markets, farm debt, farm income maintenance, and government costs were the critical issues addressed in fashioning the Food Security Act of 1985 (FSA85). Reducing government intervention in the pricing of U.S. agricultural products and in export markets was the generally accepted objective of the Act. However, the specific provisions were determined more by the existing situation of farmers and U.S. agriculture and by the dilemma of how to allocate the responsibility for the risks and costs of moving U.S. agriculture to a more market-oriented basis.

One year into the FSA85, a number of surprises – relative to anticipated outcomes – have developed. These pertain to the export markets for program crops, farm income, the government cost, and a continuing farm debt problem. Interestingly, these surprises are in large measure coincident with the critical issues in the FSA85 debate. *Farm income* will be higher than anticipated, due to reduced energy and interest costs and increases in livestock prices in response to lower feedgrain prices. *Export markets* have responded more slowly than expected to the lower market prices, stimulated by the lower loan rates and payment-in-kind (PIK) activities that placed more government stocks on the market. *Direct payments* and the government cost of the program are higher, partly related to the priority placed on reducing government stocks through PIK, the low loan rates relative to target prices, the unusually high crop yields, and slowly responding export markets. And, serious *farm debt* problems remain for a significant number of farmers and agricultural lending institutions. In short, the FSA85 as designed by the Congress and operated by the Secretary has not to this point resulted in a level of performance as favorable as originally expected.

The policy mechanisms for implementing the FSA85 are similar to those for the 1981 Farm Bill: target prices, loan rates, reduced acreage programs, paid diversions, and concessionary exports. New provisions included the conservation reserve, export enhancement, the marketing loan, and expanded use of PIK certificates to reduce high government controlled stocks. Target prices were maintained at 1985-86 levels through 1987-88; loan rates were sharply reduced (partly at the discretion of the Secretary); reduced acreage requirements were raised; the marketing loan was applied for cotton and rice; the conservation reserve was phased in; large discretionary power was provided to the Secretary in using PIK certificates; and modest steps were taken (augmenting market price declines) to increase exports.

Why, then, have the surprises associated with the FSA85 been so numerous? What are the factors responsible for these surprises? Is information available to operate the FSA85 to better achieve the general objective of moving U.S. agriculture to a more market-oriented footing? If the Secretary continues to operate the FSA85 as he did in the 1986-87 crop year, what is the likely future of U.S. agriculture? How will the paid diversion program in the 1987-88 crop year influence stocks, government cost, and farm production?

The Food and Agricultural Policy Research Institute (FAPRI) produces a semi-annual ten-year outlook and associated policy evaluation (e.g., *Long-Term International Agriculture Outlook*, Spring 1986; and FAPRI #2-86) which examine these and other questions for U.S. agriculture. The policy analysis presented in this report is based on the FAPRI-Wharton Econometric Forecasting Associates (WEFA) fall 1986 ten-year projections. The FAPRI modeling system and the FAPRI-WEFA ten-year projections are utilized to identify upcoming key agricultural issues and to assess their importance for the FSA85 and the transition of U.S. agriculture.

FSA85 AND THE GENERAL ECONOMIC SETTING

The analytical procedures used in producing the FAPRI ten-year forecast have been explained in FAPRI #2-86. Documentation for the econometric models utilized in the ten-year projections is available in CARD Staff Reports 86-SR1, 86-SR2, and 86-SR3; and CNFAP Staff Reports #5 and #9. Agriculture is treated as a satellite industry in developing the projections, which are conditioned by the WEFA long-range macroeconomic forecasts for U.S. and foreign economies and the mandated and assumed provisions of the FSA85. It is to be emphasized that the projections are conditioned by these provisions of the FSA85 and WEFA forecasts for U.S. and foreign economies.

Foreign and domestic economic situation

The WEFA forecasts used for the FAPRI ten-year projections and policy analysis are for modest growth in the U.S. and in foreign economies. Selected values from domestic and economic forecasts for variables of major importance to U.S. agriculture are summarized in Appendix Table 1. The United States is presumed to achieve a real growth rate averaging about 3% annually in 1987 and 1988, with a possibility of a recession at the end of the decade. The Pacific Basin countries grow on an average of approximately 5%, and the Latin American and African countries have average real rates of annual growth of around 3%. Exchange rates decline slightly and hold throughout the evaluation period, 1986-87 – 1995-96. Energy prices rebound somewhat from current levels of

$15 per barrel for domestic high quality crude oil but remain relatively low throughout the evaluation period, reaching $25 per barrel. These forecasted outcomes for the selected U.S. and foreign countries are based on an implied macroeconomic policy toward the deficit, which decreases from $213 billion in 1986 to $67 billion in 1995.

FSA85 program parameters

The explicit assumptions for the operation of the FSA85 are detailed in Appendix Table 2. Generally, the program parameters are at levels similar to those for the previous FAPRI ten-year analysis (FAPRI #2-86). Major changes involve the paid diversions for corn and wheat (anticipated) that were initiated in 1986 for the 1987-88 crops. The conservation reserve was assumed to be utilized to the limit provided by the FSA85. During the life of the current legislation, loan rates are set (consistent with current actions of the Secretary) at minimum allowable levels, with the exception of soybeans. Since there is no target price for soybeans, the loan rate was set to insure rough parity, based on historical calculations, between the net returns over variable costs for corn and soybeans.

In the out-periods (1990-91 – 1994-95), the government program parameters were set to reflect the actions of the Administration, Congress, and USDA during the current crop year. Paid diversions for corn and wheat continue until stocks are brought into long-term relationships to exports, production, and domestic consumption. These paid diversions and other measures were required to manage the excess production capacity and the high government stocks accumulated during the current year and in previous years under the 1981 Farm Bill.

PROJECTIONS

The intent of this description of results of the FAPRI-WEFA ten-year evaluation is to highlight the major features of projections relative to the parameters of the FSA85. Observations on the ten-year projections and their policy implications are summarized for domestic markets, U.S. agriculture, and foreign markets.

Domestic markets

For the five major crops the specific program parameters, supply and use, prices, and government costs are provided in Appendix Tables 3 through 7. Corresponding projections for the major livestock commodities are reported in Appendix Tables 8 and 9. Farm income and government payments are summarized in Appendix Table 10. General observations from of the ten-year evaluation include:

- livestock price and production responses to the low grain prices;
- dairy production responses to the buyout and low grain prices;
- market price paths relative to loan and target prices;
- stocks positions and the difficulty of reducing them;
- excess capacity and production potential at target prices; and
- returns over variable costs for participants and nonparticipants.

Livestock prices for the ten-year evaluation period are shown in Figure 1. Additional projections on the livestock markets are provided in Appendix Table 8. Livestock prices are determined by domestic demand conditions, the low feedgrain prices, and beginning inventories. Hog and cattle prices move higher, as breeding herds build in response to lower feedgrain prices in the initial years of the evaluation period. Prices decline in later years as adjustments to the lower feedgrain prices are completed. Poultry prices decline slowly throughout the period in response to lower feedgrain prices. For poultry, hogs, and cattle, the artificially low feed prices provide high profit margins in initial years; but in later years losses or lower profits and major adjustments in inventories are required as feed prices return to longer term equilibrium levels.

Despite the dairy herd buyout, dairy prices decline, reflecting the automatic annual adjustment of $0.50/cwt triggered when annual government purchases exceed 5 billion pounds until 1994. Although it seems unlikely that support prices will be permitted to go as low as $6.60, our analysis suggests that continuing the current policy will lead to this result.

Thus, in the initial years of the evaluation, except for dairy, livestock producers benefit from the low and subsidized feed prices. At the same time, the artificially low feed prices in the initial years force adjustments on the livestock sector in the longer term that will be difficult to absorb in the later years of the evaluation period. The livestock price paths, contrasted with those for the major program crops, emphasize the importance of explicitly recognizing the consequences for the livestock industry of the FSA85, particularly the parameters controlled by the Secretary.

Since the general objective of the FSA85 was for a more market-oriented U.S. agriculture, results of the analysis that carry major implications are market prices in relation to loan and target rates. Equilibrium market prices for the projection period are summarized in Figure 2 for soybeans, corn and wheat, and in Figure 3 for cotton and rice. Wheat, corn, and soybean prices remain at levels near or below loan rates through 1988-89. The surge in prices during 1989-90 is brought about by a significant decline in wheat and soybean stocks. Thereafter, wheat prices continue to rise slowly, corn prices stagnate, and soybean prices decline somewhat due to pressure from the corn market. Cotton and rice have a marketing loan, which allows market prices below the loan rates as long as market conditions remain weak. The cotton price moves above the loan rate in 1990-91, but rice price barely reaches the loan rate level by 1994-95. Among these commodities, only the prices of soybeans and cotton reach or exceed the 1985-86 level during the evaluation period. The excess capacity in the U.S. and world markets adjusts in response to lower market prices. Significantly, however, the transition period for most commodities appears to be long in duration, at least 10 years.

Stocks positions for the program commodities, except for cotton and rice, which have a marketing loan, require five or more years to approximate long-term stock-use relationships. Higher yields on the more productive land cultivated by program participants, relatively slow responses of export demand to price and income changes and an altered domestic livestock industry (producing more poultry and less red meat and using less coarse grain and high protein feed) contribute to the cost of reducing levels of government controlled stocks (See Appendix Tables 3 through 7). Corn proves to be the most difficult of the commodities to bring into balance; stocks are estimated to be far in excess of desired levels even in 1995-96. As is shown subsequently, this is in part due to the very low export level for the U.S. in 1985-86.

The excess production capacity, approximated by the acreage in the conservation reserve, the reduced acreage program, and the paid diversion is an important contributor to program cost during the first four years of the evaluation. In fact, it is not until 1990-91 that the idled production capacity declines appreciably for wheat and it declines very little for corn and soybeans. In large measure this decline or leveling is due to increases in market prices and the corresponding reductions in program participation rates. The excess supply situation for U.S. agriculture is illustrated by Figures 4 through 8. Excess supply is roughly approximated by adding beginning stocks to 80% of base yield times the acreage out-of-production due to participation in the conservation reserve or acreage reduction and diversion programs. In Figures 4 through 8, excess supply capacity is expressed as a percentage of actual production. The figures dramatically show the current high excess capacity for wheat and coarse grains, 230 and 180%, respectively. This measure declines significantly over the ten-year period for wheat but not for corn. Soybeans have no target price and reduced acreage or paid diversion options, so the excess production capacity for soybeans involves only the conservation reserve. The marketing loan program serves to reduce surplus capacity in cotton significantly by 1991-92 but progress is slower for rice.

Annual returns over variable costs for program participants and nonparticipants are summarized in Figures 9, 10, and 11 for wheat, corn, and soybeans, and cotton and rice, respectively. Clearly, farmers participating in the government programs, given the target prices and implied deficiency payments, receive high returns over variable cost relative to nonparticipants. The discrepancy between returns over variable costs for participants and nonparticipants declines somewhat after the first few years of the evaluation period, but even in later years, the differences in levels of returns over variable cost are substantially larger than that in 1985-86 in previous years and under the 1981 Farm Bill. The conclusion is that the income protection for farmers provided by FSA85 will continue to require high direct government payments throughout the years of this evaluation.

U.S. agriculture

Results of the evaluation for U.S. agriculture have been anticipated in large measure by the comments on the market outcomes for crops and livestock. An additional critical factor for the performance of the sector, not controlled by the FSA85, is production costs in the industry. Energy prices are important to the production of the program crops, as are interest rates. Both real interest rates and real energy prices have fallen and are forecasted by WEFA to remain at low levels – compared to 1981-82 through 1984-85 – during the evaluation period. Input costs, market prices, direct payments to farmers participating in commodity programs, and responses of the livestock industry have major influence on industry outcomes.

Government payments, total government (CCC) costs, and net farm income are summarized in Appendix Table 10 and graphed in Figure 12. The net farm income protection provided by the FSA85 is apparent. Net farm income increases sharply to 38.7 billion in 1987 and then declines. This increase in net farm income is related to lower production costs for crops and livestock, increased livestock prices, high deficiency payments, and changes in inventories. The changes in the value of livestock inventories due to price increases are transitory, since livestock prices in later years are reduced due to persistent low feed costs.

Government payments increase to nearly $17 billion in 1987 and 1988 and then decline, leveling off at about $13 billion. As market prices increase above the loan rates, program participation is reduced and the level of direct payments to program participants decreases. Total government (CCC) outlays are closely tied to direct government payments. Government costs are projected to be substantially higher than the $17 billion annual average anticipated when the FSA85 was passed. Government costs average about $25 billion annually for the first three program years, 1986 through 1988. Subsequently, government costs are reduced, largely related to the same factors influencing direct government payments.

For the industry, crop acreages are frequently used as an indicator of capacity utilization. Total acreages are plotted in Figure 13 for corn, wheat, soybeans, rice and cotton. The projected acreage levels for these crops provide an additional perspective for the FSA85 and the capacity situation for U.S. agriculture. Acreages for the five major program crops dip below PIK (1983) levels during 1987-88 and 1990-91, reflecting the reduced acreage and paid diversion provisions. Subsequently, in response to higher annual farm prices and lower program participation rates, acreage increases. Still, even by 1995-96, reduced acreages are required to maintain market prices above loan rates, which remain well below the levels of 1985-86. The other line on Figure 13 shows the acreage equivalent (converted at base yields) of carry-over stocks, which is reduced substantially over the evaluation period but is still high even at the end of the period.

Foreign markets

Exports for the major program crops depend on two factors: the size of the export market and the U.S. market share. This export information for wheat, coarse grains, soybeans, and soymeal is summarized in Appendix Tables 11 through 14. The FAPRI modeling system is not as complete for the export markets for rice and cotton. Exports for cotton and rice are estimated using simple reduced form equations. The key observations from the export projections include:

- coarse grains imports, exports, and market shares as affected by lower prices;
- soybean imports, exports, and market shares as affected by lower prices;
- wheat imports, exports, and market shares as affected by lower prices;
- cotton and rice export projections;
- value of exports compared to export quantities;
- markets for U.S. agricultural commodities in developing, developed and planned economies; and
- structure of export markets and retaliation possibilities.

For corn and coarse grains, exports increase in response to the lower U.S. prices, the implicit export subsidies in the FSA85, the enhanced export provisions, and the growth in world markets. Figures 14 to 17 show that the major source of growth in the export market is in the developing countries. The U.S. market share rebounds quickly from 55% in 1985-86 to 65% in 1987-88, largely due to the U.S. obtaining most of the growth in the export market. The market share for the U.S. holds fairly stable at about 65% in subsequent years. Actual export levels of major competitors grow much more slowly. Unless there is a change in the underlying structure or policies in the international coarse grain market, the short run export response to the reduced market price will be limited, implying an elasticity of about -0.5. The elasticity of demand for exports reaches -1.0 only after an adjustment period of several years.

The soybean market (Figures 18 to 21) responds to several factors: two of the more significant are the U.S. loan rate for soybeans and the competition with soybeans from the artificially low prices for coarse grains. Soybeans and coarse grains are substitutes in animal feed over a wide range of relative prices. Thus, reducing the corn/soybean price ratio due to the different program specifications for corn and soybeans decreases the feed demand for soybean meal. This indirect utilization impact is to an extent mitigated by expanded imports by the planned economies who are increasing high protein feeds in livestock rations. The implication, then, is for slow growth in the soybean imports (averaging 2.7% per annum) compared with coarse grains (averaging 4.1% per annum), with the developing countries keeping pace with the developed market economies in import growth. Here again, the U.S. captures most of the total growth in the export market and increases its market share slightly. Soymeal exports (Figure 22) grow more rapidly than soybeans (averaging 4.3% annually); and, in contrast to the last 5 years, the U.S. soymeal exports grow faster than exports of Brazil and Argentina.

For wheat (Figures 23 to 26), there has been a precipitous fall in the U.S. export market share since 1981-82. Reasons for this decline in the U.S. export market share continue to be widely debated. Since most U.S. wheat exports are to developing nations and planned economies, internal adjustments in these economies, exchange rates, and the debt situation as well as export enhancement programs of the U.S. and major competitors have broad implications for both the total wheat export market and the U.S. share. The major source of future growth in wheat trade is clearly the developing countries (Figure 23). U.S. wheat exports grow at an average annual rate of 3.6%. The U.S. share of the wheat export market increases from about 32% in 1985-86 to 41% in 1995-96, again, more from market expansion due to lower prices and higher world incomes than to reductions of export levels by major competitors.

For cotton and rice, a different situation emerges, largely due to the marketing loan. U.S. exports and export shares in these markets are increased rapidly by the high export subsidies implicit in the marketing loan program. After the initial impact of the marketing loan program, market shares of the U.S. and the other major exporters remain relatively constant. The gain in market share due to the marketing loan is maintained.

The value of total exports for major agricultural commodities is graphed in Figure 27. From Figure 27, the effect of the low price elasticities for exports in the FAPRI modeling system is evident. Although exports increase beginning in 1986-87, the value of exports only begins to rise one year later in 1987-88 and remains relatively low until near the end of the evaluation period. Thus, the contribution of gross receipts from exports to gross and net farm income is lower in the initial four years of the evaluation period due to the lower market prices. Gross receipts from exports of the five major crops rise above 1984-85 levels only near the end of the evaluation period, by 1993-94. Longer run export price elasticities implied by the FAPRI model are near -1.0 for most of the crops. Particularly for corn and wheat, the cumulative export elasticities are low for the first two or three years. Changes in the structure of export markets, due to U.S. export subsidies and/or retaliatory moves by competitors, could significantly alter these projections.

IMPLICATIONS, ADJUSTMENTS, AND PROBLEMS

The experience to date with the FSA85 and the ten-year evaluation provide a basis for a number of observations on the implications for agricultural policy and U.S. and world agriculture. These implications for the FSA85, including discretionary actions of the Secretary (actual and assumed in the evaluation period) may be useful in tuning and restructuring the FSA85 if debate of the Farm Bill is reopened in 1987. In addition, there are observations on continuing problems for U.S. agriculture not met by the FSA85 and/or requiring longer adjustment periods or higher government expenditure than anticipated at the time of the legislation. It is im-portant to identify the implications and evidence of continuing problems from the experience with the FSA85 and the present ten-year evaluation. Many of the implications have immediate consequences for the discretionary authority of the Secretary under the FSA85 and possible modifications to the FSA85. The continuing problems are important for their implications for tuning and modification of the FSA85 and to indicate where government actions different than those of the FSA85 may be required to achieve desired objectives for U.S. agriculture.

Implications

The implications stem from the experience with the export market and, more generally, the success of the FSA85 in meeting the issues that governed the Farm Bill debate. The specific implications to be highlighted from the analysis include:

- adjustments in export markets and export elasticities, short and long-term;
- farm debt deficiency payments and targeting;
- management of government stocks, prices, and loan rates;
- long-term equilibrium prices and loan rates;
- government subsidies and net farm income; and
- environmental concerns and agricultural commodity policy.

Export elasticities

Perhaps the major implication from the experience with the FSA85 to date and the ten-year evaluation involves the international markets for U.S. agricultural commodities. These markets have not responded as anticipated in costing the FSA85. During the FSA85 debate, short-term elasticities of -1.0 to -2.0 were used to justify the marketing loan and the lowering of the loan rates. The results to date suggest short-term elasticities for corn and wheat are near -0.5 and for soybeans the elasticity is slightly under -1.0. Longer term elasticities are in the range of -1.0 to -1.5. The implication is for slower export growth, higher program costs, and a recognition that high stock levels will significantly influence commodity markets and the performance of U.S. agriculture in the short-term.

Farm debt

The agricultural debt situation remains an important problem for selected individuals in the farm economy. Target prices and participation in farm programs have turned out to be blunt instruments for dealing with the farm debt conditions. For the farm debt situation in agriculture and for the affected rural communities, it has become apparent that additional targeting and alternative programs will be necessary to address the problem. Simply put, at current interest rates and debt loads for farmers with debt equity ratios in excess of 50%, the farm incomes generated by the FSA85 can do little to alleviate financial stress.

Program management

The FSA85 gave the Secretary broad discretion for use of PIK, paid diversions, and loan rates. In 1986-87, the Secretary elected to reduce most loan rates to the maximum permitted level in anticipation of an increase in exports. This export response has not materialized as anticipated. In addition, heavy use of the PIK to reduce high government stock levels has resulted in market prices near (and below) loan rates. Deficiency payments in 1986-87 and in the ten-year projection period are high as a result of this strategy. The recently announced paid diversions for corn and wheat are an alternative for addressing the high government stocks situation. The implication is that government stocks accumulated as a result of past program management strategies and good weather are extremely difficult and expensive to reduce. More attention will have to be given to balancing the FSA85 at anticipated longer term market prices with perhaps less emphasis on the more narrow objective of reducing stocks.

Long-term adjustment

On the general issues identified, the FSA85 is moving U.S. agriculture in the "right" direction, with the exception of government costs. These trends are especially evident in the out-years of the ten-year evaluation. The implication for FSA85 and the commodity markets, domestic and international, is that adjustment processes require time. It is as difficult for competitors to contract excess capacity or stabilize supply growth as it is for the U.S. If adjustment of domestic and international markets is a slow and costly process, more moderate policies, more fully incorporating the adjustment parameters may yield lower government costs and achieve the general objective of the FSA85 more efficiently.

Net farm income

Net farm income for 1986-87 and through 1988-89 is high relative to the annual average during the 1981 Farm Bill. The major reason for the higher net farm income is not the target prices but the fact that expenses for farm production have declined. In addition, inventories of livestock have been revalued based on increased prices as producers have responded to lower feed grain and protein meal prices. It is important to emphasize the role of the revaluation of inventories in net farm income calculations. These revaluations, if market prices are artificially low or distorted by policy, may be temporary. Adjustments in target prices, targeting, and other measures to reduce government cost need to recognize that a major share of the run-up in net farm income is related to transitory changes in the value of farm inventories plus a net gain from lower energy and interest costs.

Conservation reserve

The final implication to be discussed involves the conservation reserve, the experience with operating this program, and the results of the ten-year projection. The passage of the conservation reserve reflected the impact of a new alliance between environmentalists and U.S. agriculture. Production capacity in the U.S. and among competing countries has apparently expanded to the point that market prices are tipping the balance between returns to agriculture and environmental costs. There is broad public sentiment for utilizing the conservation reserve to the fullest extent. Operational decisions, perhaps freeing the conservation reserve from state-based allocations, may be useful in increasing the effectiveness of the government expenditure for reducing on and off site costs of wind and water erosion.

Problems

The identification of continuing problem areas does not reflect unrealistic expectations for the FSA85 moving agriculture to a more competitive position in world markets. The difficulties of U.S. agriculture financially and in world markets reflect underlying trends and relationships that may take a number of years to alter. The review is intended instead to suggest problem areas that may require continuing attention as the FSA85 is reevaluated. Problems to which attention is drawn include:

- countering effects of lower loan rates and export incentives;
- livestock, loan rates, and adjustment costs loan rates;
- management of high stocks versus long-term equilibrium market prices;
- farm finance and targeting of agricultural subsidies;
- integrated environmental and commodity policies; and
- technology change and the environment

Export markets

The major continuing problem for U.S. agriculture is the export market. Exports have not responded currently and in the ten-year projections as rapidly as was anticipated in designing and costing the FSA85. A major reason for the failure of the export markets to respond to the lower prices is the fact that other countries, like the U.S., are in a position to insulate prices received by farmers, and paid by consumers, from world market prices. Examples include the European Economic Community and the Planned Economies, the latter accounting for major share of coarse grain imports. The implication from the analysis of the ten-year projections is that these export markets will respond to price pressure but only on a longer term basis. More substantial growth in U.S. exports can only come from negotiated policy changes in important existing markets or more rapid growth in developing country economies, which are the major source of growth in future markets.

Livestock

One of the outcomes of the FSA85, the ten-year projections, and the decisions of the Secretary has been to sharply change relative prices of crops and livestock. Very different signals have been given to the livestock sector than the crop producers, who have higher loan rates. The livestock industry will respond to these incentives, largely in the form of lower feedgrain and protein meal prices. Unfortunately, if the livestock industry responds fully to the present price incentives, substantial losses to livestock producers will be incurred as feed prices rise in the early 1990s. The problem of regulating U.S. agriculture using a program limited to the five major crops and ignoring the livestock sector (except for dairy) is apparent. Livestock producers, the value of livestock inventory, and more generally the livestock sector under the

FSA85 will be forced to absorb many of the adjustment costs and, importantly, are being given price incentives not consistent with the longer-range market equilibrium prices.

Stocks

Since enactment of the FSA85, the management of the high government stocks for the program commodities has suggested a new problem area for farm policy. Specifically, the trade-offs between moving the stocks to the market rapidly versus holding them for a longer period have been made apparent by the heavy use of PIK and the marketing loan. Reducing the stocks positions quickly requires high deficiency payments. The result is "running the farm program" to generate market prices at or below loan rates. If the resulting market prices reflect opportunistic decisions for managing government stocks, longer term problems may be caused. Presently, the stocks positions are due largely to past program management strategies and provisions of the 1981 Farm Bill. It is important not to become preoccupied with rectifying the high stocks situation rapidly, ignoring the longer term consequences and implicit costs of these actions, particularly for the livestock sector.

Farm debt

Farm finance will continue as an important problem for particular regions and particular groups of farmers. The problem has implications as well for rural communities depending heavily on agriculture and with asset values tied closely to farm income and the farm debt. A major revaluation of U.S. agricultural assets has been underway. This revaluation of assets is consistent with the longer term movement toward free market prices for agricultural commodities. A more carefully planned transition program, recognizing the consequences for the affected farmers and for rural communities will be required if the farm debt situation is to be effectively managed. Target prices and general farm income support, not directed explicitly to the farmers and communities with serious financial stress, are expensive and ineffective ways of dealing with the farm debt situation.

Technology and the environment

Two longer term problems that deserve careful research and added attention as the FSA85 is operated and possibly altered are technological change and environmental conclusions. There is increasing evidence that the expansion in agricultural output in the U.S. has come at the expense of environmental degradation. Evidence of nitrate and pesticide levels in groundwater is accumulating. Off- and on-site costs of soil erosion are important as well. More generally, environmental concerns are likely to receive more attention in income and price stabilization policies for agriculture in the future. Environmental policies integrated with price stabilization and income support policies require careful consideration but hold out the possibility of generating "win-win-win" outcomes. The conservation reserve title of the FSA85 is an example of such a welding of concerns of farmers and environmentalists.

The second longer term problem involves technology change. For the dairy industry, the bovine growth hormone is on the horizon, implying decreased costs of milk production and perhaps significant changes regionally and internationally in dairy prices and production patterns. Genetic engineering for crops may result in significantly higher yielding varieties and varieties requiring quite different cultivation practices prior to the beginning of the 21st century. These trends in technology and their implications for farm size and the organization of agriculture should be recognized in the design of current farm programs. Even a continuation of the technology trends experienced for the past twenty years suggests lower farm prices, higher levels of competition from countries with natural resource bases suited to the production of farm commodities, and more generally, a continuing change for the farming sector, rural economies, and international commodity markets.

CONCLUSION

The objective of this evaluation of the FSA85 is not to criticize those who formulated and have operated it. We are all clairvoyant when looking backward. Still, the policies and the current operation of the program, considered together with the ten-year projections, suggest important possibilities for refinement and improvement. Perhaps the major questions raised by the evaluation are for management of government controlled stocks, the export markets, and the farm debt situation. Farm debt was a concern in the design of the FSA85, but target prices have proven to be blunt instruments for assisting debt ridden farmers and affected rural communities. Policies regarding stocks management, and the Secretary's discretionary decisions affecting stocks, appear short-sighted. Operation of the FSA85 to implement domestic market price objectives that do not approach expected long-term equilibrium prices may impose major stresses and adjustment costs, particularly for livestock producers.

International markets were expected to respond to the reductions in prices on the basis of very frail empirical evidence. The simultaneous fall in prices of all major agricultural commodities has resulted in weaker price responsiveness than anticipated. Export markets for major agricultural commodities are estimated to grow at average annual rates of less than 5%. Past rates of technology growth and the present stocks positions clearly indicate that export markets are not the full answer to U.S. excess capacity problems. The export markets respond to price, giving higher exports and increases in the U.S. shares, but not as projected during the design of the FSA85. Total export market growth and the import share of developing countries are the factors mainly responsible for the short-term increases in U.S. exports.

Problems in formulating and operating the FSA85 have been and still are in a number of respects associated with inadequate information. The objectives of the Congress, those participating in the legislative process, and the Secretary were and are for a more competitive U.S. agriculture, reductions of government intervention in agriculture, and a more market-oriented industry. Broad agreement on these objectives appears to hold firm. The outcomes of policy to date and into the projection period emphasize the importance of choosing appropriate instruments and the value of having accurate information on their likely impacts. Proper choices of policy instruments require improved knowledge of the structure and functioning of U.S. agriculture, domestic and international markets, environmental impacts, and technology trends.

U.S. agriculture clearly needs better information to insure more efficient policy decision making. Improved knowledge will lessen the requirement for subjective judgement in policy decisions. Additional information and analyses like the one presented here can focus farm program concerns on issues about which there is true uncertainty. Agricultural programs, and in fact all regulatory programs, ultimately require judgements and the weighing of equity considerations. A value of improved economic analysis and an augmented information base underpinning the policy process will orient necessary judgements and debate to the key issues and equity questions. An additional value, and one particularly important for the longer term stability and productivity of agriculture, is that policy-makers will gain confidence to move away from myopic to less opportunistic decisions.

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APPENDIX TABLE 1. DOMESTIC AND FOREIGN ECONOMIC PROJECTIONS USED IN THE 10-YEAR EVALUATION OF THE FSA85

Variable	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
United States												
Real GNP (% change)	3.0	2.6	3.6	2.9	0.8	5.2	3.3	3.3	2.9	2.9	2.6	2.6
GNP Deflator (% change)	3.4	2.8	3.3	4.3	5.3	3.6	4.2	4.5	4.8	5.3	5.4	5.5
Civilian Unemployment Rate (%)	7.3	7.1	6.7	6.7	7.6	7.0	6.8	6.6	6.6	6.8	7.0	7.7
3-Month T. Bill Rate (%)	7.5	5.8	5.8	6.6	7.0	6.5	5.8	5.9	6.2	6.6	6.9	7.3
Moody's AAA Corporate Bond Rate (%)	11.4	8.89	8.6	9.25	9.74	8.8	8.1	8.24	8.39	8.68	8.9	9.36
Federal Budget Surplus (Bil. $)	-198.0	-213.3	-155.5	-180.4	-239.4	-187.7	-159.4	-134.6	-111.6	-94.5	-66.9	-113.6
Foreign/Domestic												
Light Arabian Crude Oil ($ per barrel)	28.0	14.0	15.0	17.0	19.0	21.0	24.0	24.0	24.0	24.0	24.0	24.0
Foreign Currency/ Dollar (% change)	-17.0	-8.4	-5.3	-2.8	-1.4	2.9	1.4	2.8	1.4	1.3	1.3	1.3
Real GNP (% change)												
Africa	1.5	-3.9	-0.1	2.4	2.8	4.4	3.2	3.1	3.0	3.1	3.1	3.1
Latin America	3.4	2.2	3.7	3.4	2.4	3.7	3.7	3.6	3.6	3.6	3.5	3.5
Pacific Basin	2.3	4.3	4.8	5.1	4.8	5.9	5.5	5.2	5.3	5.3	5.2	5.2
Western Europe	2.3	2.6	2.6	2.4	2.1	2.8	2.7	2.6	2.6	2.6	2.6	2.6
Centrally Planned	4.7	3.7	3.3	3.3	3.4	3.3	3.6	3.5	3.4	3.5	3.5	3.5

Sources: Wharton Econometric Forecasting Associates, Long-Term Forecast and World Economic Outlook, October 1986.

APPENDIX TABLE 2. VALUES FOR SELECTED POLICY PARAMETERS, FSA85 AND BEYOND

			Reserve			Paid diversion		
Crop & year	Loan rate	Target price	Entry	Release	ARP	Level	Rate	CR
		– Dollars per bushel –			– Percent of base –		– $/bu –	– Million acres –
Corn								
85-86	2.55	3.03	2.55	3.25	10	–	–	0.0
86-87	1.92	3.03	1.92	3.25	17.5	2.5	0.73	1.0
87-88	1.82	3.03	1.82	3.25	20	15.0	2.00	2.2
88-89	1.73	2.97	1.73	3.25	20	15.0	2.00	3.3
89-90	1.65	2.88	1.65	3.25	20	15.0	2.00	5.2
90-91	1.56	2.74	1.56	3.25	20	15.0	2.00	7.0
91-92	1.49	2.74	1.49	3.25	20	10.0	2.00	7.0
92-93	1.50	2.74	1.50	3.25	20	10.0	2.00	7.0
93-94	1.68	2.74	1.68	3.25	20	10.0	2.00	7.0
94-95	1.65	2.74	1.65	3.25	20	10.0	2.00	7.0
95-96	1.69	2.74	1.69	3.25	20	10.0	2.00	7.0
		– Dollars per bushel –			– Percent of base –		– $/bu –	– Million acres –
Wheat								
85-86	3.30	4.38	3.30	4.45	20	10	2.70	0
86-87	2.40	4.38	2.40	4.45	22.5	10	1.10*	2.8
87-88	2.28	4.38	2.28	4.45	27.5	7.5	3.00**	8.2
88-89	2.17	4.29	2.17	4.45	30	10	3.00	13.7
89-90	2.06	4.16	2.06	4.45	30	10	3.00	18.9
90-91	1.95	3.95	1.95	4.45	25	–	–	24.1
91-92	2.32	3.95	2.32	4.45	20	–	–	24.1
92-93	2.20	3.95	2.20	4.45	20	–	–	24.1
93-94	2.22	3.95	2.22	4.45	20	–	–	24.1
94-95	2.28	3.95	2.28	4.45	15.0	–	–	24.1
95-96	2.33	3.95	2.33	4.45	15.0	–	–	24.1
		– Cents per pound –			– Percent of base –		– ¢/lb –	– Million acres –
Cotton								
85-86	57.0	86.0	–	–	20	10	30	0
86-87	55.0	81.0	–	–	25	–	–	.5
87-88	52.0	79.0	–	–	20	–	–	0.8
88-89	50.0	77.0	–	–	20	–	–	1.2
89-90	50.0	75.0	–	–	15	–	–	1.2
90-91	50.0	73.0	–	–	15	–	–	1.2
91-92	50.0	73.0	–	–	10	–	–	1.2
92-93	50.0	73.0	–	–	10	–	–	1.2
93-94	50.0	73.0	–	–	10	–	–	1.2
94-95	50.0	73.0	–	–	10	–	–	1.2
95-96	50.0	73.0	–	–	10	–	–	1.2

(continued)

APPENDIX TABLE 2. VALUES FOR SELECTED POLICY PARAMETERS, FSA85 AND BEYOND (CONCLUDED)

			Reserve			Paid diversion		
Crop & year	Loan rate	Target price	Entry	Release	ARP	Level	Rate	CR
	–	Dollars per cwt		–	– Percent of base	–	- $/cwt -	- Million acres -
Rice								
85-86	8.00	11.90	–	–	20	15	3.50	0
86-87	7.20	11.90	–	–	35	–	–	0
87-88	6.84	11.66	–	–	35	–	–	0
88-89	6.50	11.30	–	–	30	–	–	0
89-90	6.50	10.95	–	–	30	–	–	0
90-91	6.50	10.71	–	–	30	–	–	0
91-92	6.50	10.71	–	–	30	–	–	0
92-93	6.50	10.71	–	–	30	–	–	0
93-94	6.50	10.71	–	–	25	–	–	0
94-95	6.50	10.71	–	–	25	–	–	0
95-96	6.50	10.71	–	–	25	–	–	0
	–	Dollars per bushel		–	– Percent of base	–	- $/bu -	- Million acres -
Soybeans								
85-86	5.02	–	–	–	–	–	–	0
86-87	4.77	–	–	–	–	–	–	1.2
87-88	4.77	–	–	–	–	–	–	2.5
88-89	4.53	–	–	–	–	–	–	3.7
89-90	4.50	–	–	–	–	–	–	5.9
90-91	4.50	–	–	–	–	–	–	8.1
91-92	4.50	–	–	–	–	–	–	8.1
92-93	4.50	–	–	–	–	–	–	8.1
93-94	4.50	–	–	–	–	–	–	8.1
94-95	4.50	–	–	–	–	–	–	8.1
95-96	4.50	–	–	–	–	–	–	8.1

ARP: Acreage Reduction Program

CR: Conservation Reserve

* Also, 10 percent paid diversion for winter wheat producers at $2.00/bu.

** Not yet announced but anticipated.

APPENDIX TABLE 3. WHEAT PROGRAM PARAMETERS, SUPPLY AND USE, PRICES, AND GOVERNMENT COST FOR THE FOOD SECURITY ACT OF 1985 AND BEYOND

Variable/Year	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
Base Acreage (mil)	93.3	91.3	89.7	88.6	87.5	86.5	86.5	86.5	86.5	86.5	86.5
CR Acreage (mil)	0.0	2.8	8.2	13.7	18.9	24.1	24.1	24.1	24.1	24.1	24.1
ARP (percent)	20.0	22.5	27.5	30.0	30.0	25.0	20.0	20.0	20.0	15.0	15.0
Paid Diver. (percent)[a]	10.0	10.0	7.5	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0
Participation (percent)	74.0	81.0	91.6	89.8	88.4	82.4	82.7	80.7	82.1	81.4	81.4
Set Aside Acres	13.8	16.6	22.6	23.9	23.2	17.8	14.3	14.0	14.2	10.6	10.6
Planted Acreage (mil)	75.6	71.8	68.6	58.7	55.6	63.0	67.0	67.6	68.3	71.9	73.2
Yield (bu/acre)	37.5	34.3	38.2	38.7	39.1	39.2	39.4	39.8	40.2	40.5	40.8
Production (mil bu)	2425	2077	2141	2020	1934	2195	2352	2397	2446	2593	2660
Domestic Use (mil bu)	1045	1086	1103	1124	1119	1097	967	958	963	981	984
Exports (mil bu)	915	1002	1092	1196	1294	1345	1384	1455	1530	1617	1685
Ending Stocks (mil bu)	1905	1903	1853	1555	1078	833	835	821	775	773	765
Prices ($/bu)											
Farm Price	3.16	2.29	2.28	2.27	2.53	2.62	2.75	2.67	2.80	2.80	2.85
Loan Rate	3.30	2.40	2.28	2.17	2.06	1.95	2.32	2.20	2.22	2.28	2.33
Target Price	4.38	4.38	4.38	4.29	4.16	3.95	3.95	3.95	3.95	3.95	3.95
Return/Acre ($/acre)*											
Non Participant	55.46	16.97	24.10	21.26	28.51	28.13	30.66	24.10	25.68	21.32	18.19
Participants	73.79	61.21	67.89	62.49	57.77	54.22	57.57	55.00	52.53	53.61	49.82

	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	FY1992	FY1993	FY1994	FY1995
Government Cost**										
Direct Payments (mil $)	3194.59	4480.00	5103.00	4634.00	3814.00	4412.00	4200.00	4289.00	4351.00	4275.00

* Returns per acre are net revenues over variable production cost and do not include land cost.

** Direct payments represent cash paid to producers in connection with a particular crop. Outlays include price support loans and other program costs. PIK quantities are volume grain paid out to farmers in lieu of cash.

[a] 10% paid diversion optional for winter wheat producers.

APPENDIX TABLE 4. CORN PROGRAM PARAMETERS, SUPPLY AND USE, PRICES, AND GOVERNMENT COST FOR THE FOOD SECURITY ACT OF 1985 AND BEYOND

Variable/Year	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
Base Acreage (mil)	84.2	82.4	81.3	80.8	80.0	79.2	79.2	79.2	79.2	79.2	79.2
CR Acreage (mil)	0.0	1.0	2.2	3.3	5.2	7.0	7.0	7.0	7.0	7.0	7.0
ARP (percent)	10.0	17.5	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Paid Diver. (percent)	0.0	2.5	15.0	15.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0
Participation (percent)	58.0	85.0	86.7	87.0	86.4	71.8	79.2	73.8	72.7	66.9	69.9
Planted Acreage (mil)	83.3	76.6	67.8	65.7	64.0	64.8	65.9	65.8	66.3	66.8	67.5
Yield (bu/acre)	118.0	119.3	118.4	120.9	123.1	124.5	125.9	127.7	129.0	130.2	131.7
Production (mil bu)	8865	8223	7065	6990	6930	7101	7300	7393	7529	7655	7824
Domestic Use (mil bu)	5245	5509	5635	5709	5595	5747	5743	5706	5678	5578	5689
Exports (mil bu)	1241	1314	1526	1590	1568	1702	1782	1867	1877	1983	2087
Ending Stocks (mil bu)	4038	5441	5348	5040	4808	4460	4237	4057	4032	4128	4178
Prices ($/bu)											
Farm Price	2.35	1.65	1.66	1.69	1.97	1.71	1.88	1.96	2.18	2.12	2.01
Loan Rate	2.55	1.92	1.82	1.73	1.65	1.56	1.49	1.50	1.68	1.65	1.69
Target Price	3.03	3.03	3.03	2.97	2.88	2.74	2.74	2.74	2.74	2.74	2.74
Return/Acre ($/acre)*											
Non Participant	127.37	50.51	48.25	49.11	77.34	38.85	56.19	60.51	82.00	65.76	42.84
Participants	176.79	158.22	154.75	149.90	145.53	130.39	127.51	125.10	122.71	117.61	112.09

	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	FY1992	FY1993	FY1994	FY1995
Government Cost**										
Direct Payments (mil $)	4032.20	3506.00	7950.00	8196.00	7077.00	6414.00	7124.00	6364.00	6385.00	6561.00

* Returns per acre are net revenues over variable production cost and do not include land cost.

** See Appendix Table 3.

FOOD AND AGRICULTURAL POLICY RESEARCH INSTITUTE

APPENDIX TABLE 5. SOYBEANS PROGRAM PARAMETERS, SUPPLY AND USE, PRICES, AND GOVERNMENT COST FOR THE FOOD SECURITY ACT OF 1985 AND BEYOND

Variable/Year	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
CR Acreage (mil)	0.0	1.2	2.5	3.7	5.9	8.1	8.1	8.1	8.1	8.1	8.1
Planted Acreage (mil)	63.1	61.8	60.0	59.5	59.1	65.0	64.0	67.0	67.1	68.6	67.5
Yield (bu/acre)	34.1	33.8	32.3	32.7	33.1	33.3	33.7	34.1	34.5	34.9	35.3
Production (mil bu)	2099	2009	1893	1900	1910	2118	2110	2237	2267	2345	2333
Domestic Use (mil bu)	1139	1176	1205	1228	1222	1242	1251	1285	1295	1323	1338
Exports (mil bu)	740	748	789	834	863	884	910	936	955	976	1001
Ending Stocks (mil bu)	536	621	519	357	182	174	123	139	155	201	196
Prices ($/bu)											
Farm Price	5.10	4.65	4.63	4.65	5.90	5.57	5.96	5.67	5.78	5.30	5.28
Loan Rate	5.02	4.77	4.77	4.53	4.50	4.50	4.50	4.50	4.50	4.50	4.50
Return/Acre ($/acre)*	105.78	90.83	82.57	81.77	121.09	107.36	119.71	107.64	109.33	90.18	86.12

	CY1986	CY1987	CY1988	CY1989	CY1990	CY1991	CY1992	CY1993	CY1994	CY1995
Government Cost**										
Direct Payments (mil $)	126.0	179.0	240.0	361.0	368.0	283.0	283.0	283.0	283.0	283.0

* Returns per acre are net revenues over variable production cost and do not include land cost.

** See Table 3.

FOOD AND AGRICULTURAL POLICY RESEARCH INSTITUTE

APPENDIX TABLE 6. RICE PROGRAM PARAMETERS, SUPPLY AND USE, PRICES, AND GOVERNMENT COST FOR THE FOOD SECURITY ACT OF 1985 AND BEYOND

Variable/Year	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
Base Acreage (mil)	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
CR Acreage (mil)	0	0	0	0	0	0	0	0	0	0	0
ARP (percent)	35	35	35	30	30	30	30	30	25	25	25
Participation (percent)	87.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0
Planted Acreage (mil)	2.52	2.35	2.37	2.58	2.58	2.58	2.58	2.58	2.78	2.78	2.78
Yield (lbs/acre)	5437	5552	6050	6165	6205	6245	6285	6315	6355	6395	6435
Production (mil cwt)	136.0	129.5	142.8	155.0	158.0	159.0	160.0	161.1	174.6	175.7	176.8
Domestic Use (mil cwt)	55.0	58.4	59.2	61.3	63.4	64.8	67.3	68.9	70.4	72.0	73.8
Exports (mil cwt)	58.7	75.9	80.3	84.2	86.9	89.9	92.5	93.6	97.3	98.6	99.9
Ending Stocks (mil cwt)	77.3	57.1	55.8	60.4	63.5	63.2	58.9	52.1	54.1	54.3	52.4
Prices ($/cwt)											
Farm Price	6.72	4.32	4.86	4.96	5.26	5.62	5.73	5.90	6.18	6.52	6.50
Loan Rate	8.00	7.20	6.84	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Target Price	11.90	11.90	11.66	11.30	10.95	10.71	10.71	10.71	10.71	10.71	10.71
Return/Acre ($/acre)*	186.50	156.11	164.08	131.44	124.76	145.26	201.10	192.47	180.71	168.86	161.60

	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	FY1992	FY1993	FY1994	FY1995
Government Cost**										
Direct Payments (mil $)	973.00	878.00	890.00	805.00	732.00	730.00	707.00	708.00	648.00	655.00

* Returns per acre are net revenues over variable production cost and do not include land cost.

** See Table 3.

APPENDIX TABLE 7. COTTON PROGRAM PARAMETERS, SUPPLY AND USE, PRICES, AND GOVERNMENT COST FOR THE FOOD SECURITY ACT OF 1985 AND BEYOND

Variable/Year	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
Base Acreage (mil)	15.80	15.80	15.80	15.80	15.80	15.80	15.80	15.80	15.80	15.80	15.80
CR Acreage (mil)	0.5	0.8	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
ARP (percent)	20	25	20	20	15	15	10	10	10	10	10
Participation (percent)	83.0	95.0	98.0	98.0	98.0	98.0	92.0	92.0	92.0	92.0	92.0
Planted Acreage (mil)	10.69	9.59	10.00	10.00	10.80	10.80	11.60	11.60	11.60	11.60	11.60
Yield (bu/acre)	630	574	584	594	601	607	615	622	626	633	639
Production (mil bales)	13.43	10.69	11.46	11.66	12.79	12.92	14.11	14.28	14.37	14.28	14.37
Domestic Use (mil bales)	6.41	6.81	7.21	7.37	7.49	7.43	7.60	7.69	7.80	7.92	8.03
Exports (mil bales)	1.97	6.31	6.43	6.75	6.74	6.67	6.72	6.74	6.78	6.79	6.82
Ending Stocks (mil bales)	9.25	6.90	8.06	5.70	4.36	3.29	3.18	3.14	3.04	2.71	2.34
Prices ($/lb)											
Farm Price	0.55	0.45	0.44	0.42	0.44	0.56	0.56	0.56	0.57	0.58	0.61
Loan Rate	0.57	0.55	0.52	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Target Price	0.86	0.81	0.79	0.77	0.75	0.73	0.73	0.73	0.73	0.73	0.73
Return/Acre ($/acre)*											
Non Participant	88.16	21.69	14.77	-8.00	-7.42	55.61	47.63	35.73	26.36	22.65	20.44
Participants	168.01	238.06	214.25	158.67	123.31	92.27	90.47	94.98	82.20	68.70	68.70

	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	FY1992	FY1993	FY1994	FY1995
Government Cost**										
Direct Payments (mil $)	2145.00	2230.00	2192.00	2110.00	1187.00	1170.00	1186.00	1131.00	1071.00	866.00

* Returns per acre are net revenues over variable production cost and do not include land cost.

** See Table 3.

APPENDIX TABLE 8. FAPRI ANALYSIS PROJECTION FOR BEEF, CHICKEN, AND PORK UNDER THE FOOD SECURITY ACT OF 1985

Commodity and Variable	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Beef												
Omaha Price ($/cwt)	58.31	58.00	64.95	68.55	70.00	67.90	64.60	60.70	57.20	54.50	55.00	58.00
Commercial Production (million lbs)	23 723	24 174	22 000	20 240	19 630	20 020	20 620	21 240	21 770	22 205	21 985	21 325
Per Capita Consumption (lbs retail weight)	79.10	79.80	73.20	67.40	64.80	65.10	66.10	67.30	68.20	68.90	67.80	65.60
Retail Price ($/lb)	2.37	2.38	2.66	2.90	2.98	2.89	2.79	2.66	2.56	2.48	2.57	2.66
Chicken												
Wholesale Price, 12 City ($/lb)	0.57	0.55	0.53	0.49	0.48	0.46	0.44	0.42	0.40	0.39	0.40	0.40
Production, Broiler (million lbs)	13 762	14 298	15 264	15 934	16 385	16 875	17 415	17 940	18 300	18 760	18 570	18 475
Per Capita Consumption (lbs retail weight)	54.90	56.80	60.20	61.90	62.90	63.70	64.70	66.00	66.40	66.90	65.30	65.00
Retail Price ($/lb)	0.78	0.79	0.74	0.72	0.71	0.69	0.68	0.66	0.66	0.65	0.67	0.67
Pork												
7 Market Price ($/cwt)	44.84	51.40	51.90	45.00	37.00	30.00	35.00	40.00	46.50	44.00	41.00	41.00
Commercial Production (million lbs)	14 803	14 097	13 850	15 060	16 260	17 310	15 925	14 810	13 920	14 616	15 350	16 300
Per Capita Consumption (lbs retail weight)	62.80	59.60	58.70	63.20	66.40	68.70	63.00	68.50	55.00	56.60	58.40	57.60
Retail Price ($/lb)	1.62	1.72	1.78	1.63	1.55	1.49	1.62	1.73	1.84	1.76	1.69	1.74
Total Expenditures ($/capita)	331.82	337.27	343.64	342.94	340.22	334.76	330.39	323.84	319.56	314.01	316.37	318.24
Total Per Capita Consumption	196.80	196.20	192.10	192.60	194.20	197.50	193.70	191.90	189.70	192.40	191.50	188.10

APPENDIX TABLE 9. PROJECTIONS OF SELECTED DAIRY INDUSTRY VARIABLES THROUGH 1990-91.

Marketing year	Milk cows	Milk productivity	Milk production	Grade B price	Blend price	Total government purchases
	thousands	lbs/cow/yr	mil. lb.	$/cwt.	$/cwt.	bil. lb.
1985[a]	10 805	12 841	141 145	12.60	13.54	18.26[b]
1986	11 179	13 174	144 790	11.60	12.54	20.73
1987	10 803	13 343	141 581	11.29	12.23	16.52
1988	10 419	13 369	139 761	9.60	10.54	12.87
1989	10 489	13 411	140 337	9.10	10.04	12.01
1990	10 440	13 620	142 153	8.60	9.54	12.40
1991	10 434	13 709	142 512	8.10	9.04	11.15
1992	10 356	13 835	142 496	7.60	8.54	9.54
1993	10 243	13 965	142 047	7.10	8.04	7.53
1994	10 099	14 089	140 996	6.60	7.54	4.91
1995	9 915	14 258	140 548	6.60	7.54	3.09

[a] Actual

[b] Preliminary estimate.

APPENDIX TABLE 10. PROJECTIONS FOR FARM INCOME AND GOVERNMENT PAYMENTS UNDER THE FOOD SECURITY ACT OF 1985

Variable/Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
						Billions of dollars					
Cash Receipts from Marketings	142.1	134.8	131.6	131.0	131.7	134.8	136.2	136.8	138.2	139.9	142.4
Crops	72.6	61.6	58.7	59.6	62.5	67.8	70.6	73.0	75.4	77.8	79.6
Livestock	69.4	73.1	72.9	71.3	69.1	66.9	65.6	63.8	62.7	62.0	62.8
Direct Government Payments & Subsidies*	7.7	10.9	16.9	16.6	14.3	13.1	13.8	12.9	12.9	12.9	12.5
Total Farm Cash Receipts	156.2	151.7	154.5	153.5	152.1	153.9	156.0	155.8	157.2	158.8	160.9
Net Farm Income (nominal $)	30.4	26.5	38.7	33.8	27.9	26.2	27.5	24.6	25.1	23.2	22.2
Net Farm Income (1967 $)	9.8	8.8	12.7	10.6	8.5	7.9	8.0	6.9	6.9	6.2	5.7
Government Outlays**		21.6	14.9	19.9	17.8	15.7	15.5	16.3	15.4	15.4	15.1

* Five program crops.

** Feedgrains, foodgrains, soybeans, and cotton on fiscal year basis.

APPENDIX TABLE 11. WORLD WHEAT TRADE SUMMARY

Year	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
						Million metric tons					
Net Exporters											
Canada	17.70	18.50	21.88	21.65	20.86	20.53	20.62	20.70	20.83	21.23	21.82
Australia	16.00	14.50	12.58	14.05	14.88	15.48	15.91	16.25	16.51	16.64	16.86
EC	14.59	12.75	13.04	13.57	13.68	14.88	15.30	15.19	15.17	15.06	14.88
Argentina	4.30	5.10	5.55	6.52	7.17	7.92	8.59	9.36	10.00	10.74	11.45
Total Non-U.S.	52.59	50.85	53.06	55.80	56.59	58.81	60.43	61.50	62.50	63.66	65.01
United States	24.90	27.27	29.75	32.71	35.25	36.65	37.66	39.61	41.63	44.00	45.86
(trade share %)	32.1	34.9	35.9	37.0	38.4	38.4	38.4	39.2	40.0	40.9	41.4
Total Net Exports	77.49	78.12	82.81	88.51	91.85	95.46	98.09	101.11	104.13	107.66	110.87
Net Importers											
Japan	5.40	5.50	5.53	5.54	5.53	5.54	5.56	5.62	5.65	5.69	5.72
India	-2.10	-1.23	-1.84	-1.05	-0.86	-1.04	-1.65	-1.72	-1.66	-1.49	-1.20
USSR	14.76	12.68	13.25	14.59	15.94	16.41	16.67	16.88	17.14	17.43	17.76
China	6.65	7.00	6.26	6.41	6.52	6.56	6.77	7.02	7.46	8.04	8.75
E. Europe	0.60	1.00	0.89	1.15	1.36	1.69	2.08	2.31	2.55	2.80	3.12
Africa & M.E.	20.07	21.01	22.37	23.35	23.86	24.74	25.64	26.46	27.19	27.95	28.54
Other Asia	9.19	10.14	11.16	11.89	12.43	13.27	13.79	14.34	14.84	15.40	15.83
Other Lat. Amer.	9.27	9.73	10.94	11.64	12.11	12.82	13.11	13.41	13.67	13.96	14.18
Other W. Europe	-0.50	-0.59	-0.66	-0.75	-1.03	-1.28	-1.31	-1.34	-1.41	-1.49	-1.65
Other Importers	13.02	13.79	14.91	15.72	15.99	16.75	17.43	18.13	18.71	19.37	19.80
Total Net Imports	76.35	79.02	82.81	88.51	91.85	95.46	98.09	101.11	104.13	107.66	110.87

APPENDIX TABLE 12. WORLD FEEDGRAINS TRADE SUMMARY

	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
						1000 metric tons					
Net Exporters											
Argentina	9 946	9 929	10 094	10 403	10 939	10 774	11 027	11 160	11 812	12 228	12 639
Canada	4 095	4 727	5 007	4 836	5 465	5 475	5 418	5 569	5 904	6 245	6 430
Australia	5 403	4 137	3 990	3 928	4 091	3 978	4 006	4 052	4 254	4 362	4 407
Thailand	3 754	3 549	3 622	3 777	3 956	4 091	4 233	4 407	4 613	4 772	4 900
EC-10	4 548	2 180	1 564	1 168	2 108	2 745	3 219	3 650	4 003	4 350	4 622
South Africa	2 066	1 879	1 743	1 722	1 726	1 723	1 741	1 757	1 807	1 832	1 841
Total Non-U.S.	29 812	26 402	26 020	25 835	28 285	28 786	29 644	30 595	32 393	33 788	34 839
United States	35 989	41 173	47 439	49 291	49 292	52 957	55 192	57 519	58 495	60 943	63 949
(trade share %)	54.7	60.9	64.6	65.6	63.5	64.8	65.1	65.3	64.4	64.3	64.7
Total Net Exports	65 801	67 575	73 458	75 126	77 577	81 742	84 836	88 114	90 887	94 731	98 787
Net Importers											
Japan	21 161	22 019	22 918	23 529	23 986	24 792	25 333	25 916	26 467	27 139	27 864
Spain	3 581	6 192	6 751	6 899	6 859	6 995	7 003	7 018	6 988	7 065	7 195
USSR	13 280	12 704	14 494	15 963	16 439	16 750	17 006	17 310	17 651	18 020	18 413
Eastern Europe	2 898	852	2 635	2 452	2 562	3 035	3 005	3 128	3 236	3 318	3 418
High Inc E. Asi	8 737	9 648	10 046	10 431	10 928	11 493	11 963	12 430	12 908	13 460	14 061
Other	16 145	16 161	16 615	15 852	16 803	18 678	20 526	22 312	23 637	25 729	27 836
Total Net Imports	65 801	67 575	73 458	75 126	77 577	81 742	84 836	88 114	90 887	94 731	98 787

APPENDIX TABLE 13. WORLD SOYBEANS TRADE SUMMARY

Year	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
						1000 metric tons					
Net Exporters											
Argentina	2 750	2 900	2 897	2 559	2 330	2 285	2 278	2 392	2 514	2 673	2 821
Brazil	850	1 950	2 285	2 366	2 147	2 028	1 853	1 832	1 745	1 720	1 522
China	900	800	800	800	800	800	800	800	800	800	800
Total Non-U.S.	4 500	5 650	5 982	5 725	5 278	5 114	4 932	5 025	5 059	5 193	5 143
United States	20 140	20 680	21 465	22 692	23 401	24 038	24 772	25 367	25 952	26 455	27 234
(trade share %)	81.7	78.5	78.2	79.9	81.6	82.5	83.4	83.5	83.7	83.6	84.1
Total Net Exports	24 640	26 330	27 447	28 417	28 679	29 152	29 704	30 392	31 011	31 648	32 376
Net Importers											
EC	9 670	9 500	9 985	10 206	10 112	10 125	10 222	10 396	10 573	10 735	10 919
Spain	2 200	2 300	2 505	2 633	2 612	2 735	2 904	3 123	3 306	3 429	3 573
Japan	4 750	4 850	5 081	5 297	5 376	5 398	5 404	5 419	5 427	5 499	5 602
E. Europe	900	790	743	769	712	750	754	794	807	846	866
USSR	2 000	2 000	2 050	2 100	2 150	2 200	2 250	2 300	2 350	2 400	2 450
ROW	5 390	6 781	7 083	7 413	7 716	7 943	8 170	8 360	8 549	8 739	8 966
Total Net Imports	24 910	26 221	27 447	28 417	28 679	29 152	29 704	30 392	31 011	31 648	32 376

APPENDIX TABLE 14. WORLD SOYMEAL TRADE SUMMARY

Year	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
						1000 metric tons					
Net Exporters											
Argentina	2 800	3 150	3 226	3 397	3 552	3 691	3 842	3 967	4 085	4 181	4 272
Brazil	6 800	7 850	8 073	8 117	8 382	8 697	9 064	9 281	9 481	9 593	9 785
China	550	500	550	600	600	600	600	600	600	600	600
Total Non-U.S.	10 150	11 500	11 849	12 114	12 535	12 988	13 506	13 849	14 166	14 374	14 656
United States	5 490	5 350	5 911	6 395	6 594	7 204	7 369	7 740	8 143	8 734	9 066
(trade share %)	35.1	31.8	33.3	34.6	34.5	35.7	35.3	35.9	36.5	37.8	38.2
Total Net Exports	15 640	16 850	17 760	18 509	19 129	20 192	20 875	21 589	22 309	23 108	23 722
Net Importers											
EC	7 340	7 600	8 484	8 901	9 082	9 715	10 090	10 504	10 902	11 370	11 678
Spain	690	590	697	812	907	1 024	957	935	905	946	951
Japan	79	183	132	73	94	202	340	477	622	727	806
E. Europe	3 800	3 880	3 937	3 969	4 061	4 078	4 124	4 139	4 176	4 192	4 224
USSR	600	600	770	840	910	980	1 050	1 120	1 190	1 260	1 330
ROW	3 941	3 580	3 740	3 914	4 074	4 194	4 314	4 414	4 514	4 614	4 734
Total Net Imports	16 450	16 433	17 760	18 509	19 129	20 192	20 875	21 589	22 309	23 108	23 722

APPENDIX TABLE 15. ANNUAL VALUE OF U.S. AGRICULTURAL EXPORTS FOR SELECTED COMMODITIES UNDER THE FOOD SECURITY ACT OF 1985

Fiscal/Year	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
							million dollars					
Corn	5 918	3 490	2 544	2 995	3 186	3 685	3 461	4 007	4 390	4 927	5 065	5 053
Wheat	5 707	3 400	2 689	2 922	3 090	3 887	4 122	4 537	4 584	5 060	5 350	5 677
Soybeans	3 823	4 162	3 835	4 020	4 278	5 622	5 436	5 989	5 840	6 096	5 712	5 836
Soymeal	877	820	885	892	983	1 128	1 256	1 356	1 433	1 513	1 573	1 616
Rice	694	538	424	479	530	585	654	698	732	797	861	881
Cotton	1 919	585	1 513	1 508	1 511	1 580	1 987	2 001	2 007	2 055	2 094	2 211
Total	18 938	12 995	11 890	12 816	13 578	16 487	16 916	18 624	18 986	20 448	20 655	21 274

FIGURE 1. LIVESTOCK PRICES

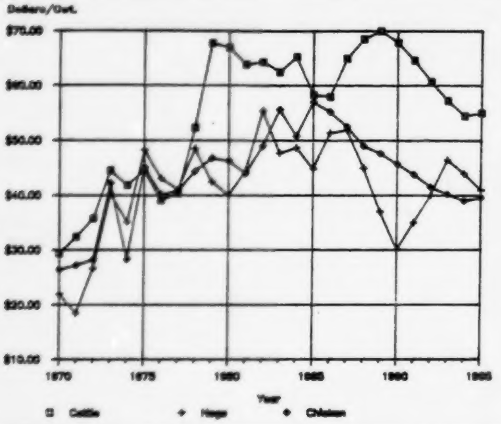


FIGURE 2. SEASON AVERAGE PRICES

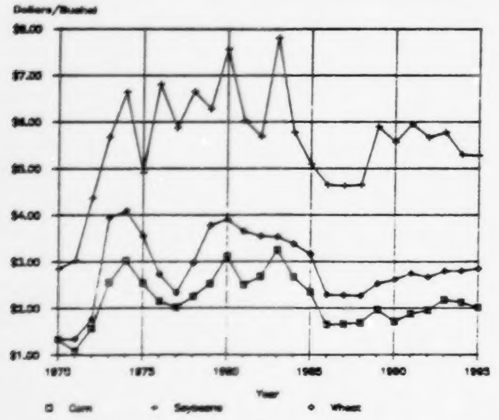


FIGURE 3. SEASON AVERAGE PRICES

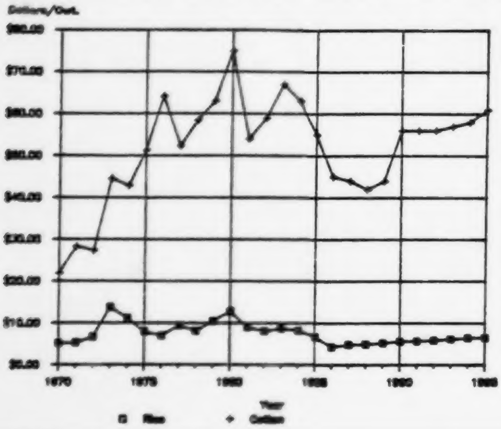


FIGURE 4. POTENTIAL WHEAT SUPPLY - PERCENT OF TOTAL PRODUCTION

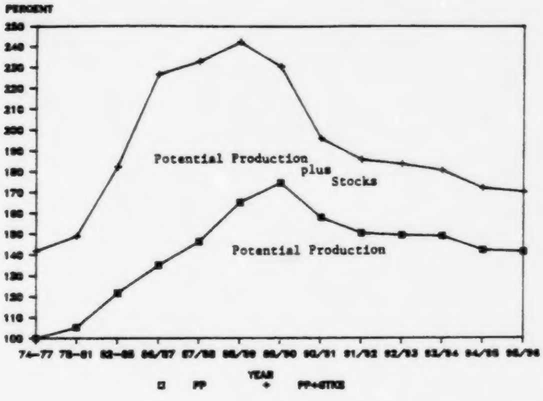


FIGURE 5. POTENTIAL CORN SUPPLY - PERCENT OF TOTAL PRODUCTION

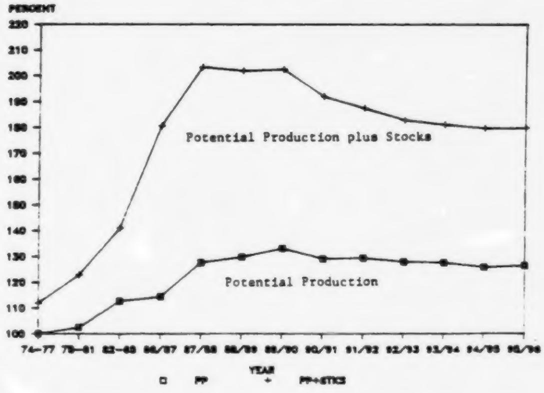


FIGURE 6. POTENTIAL SOYBEAN SUPPLY - PERCENT OF TOTAL PRODUCTION

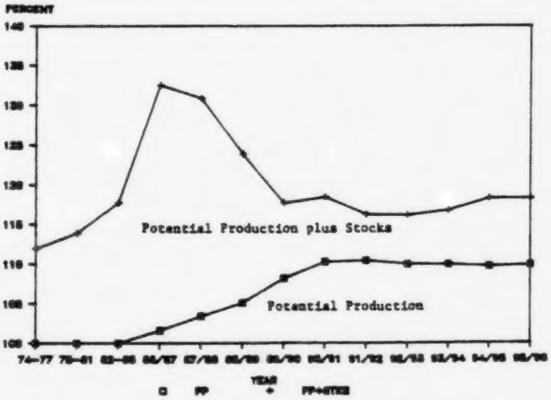


FIGURE 7. POTENTIAL COTTON SUPPLY - PERCENT OF TOTAL PRODUCTION

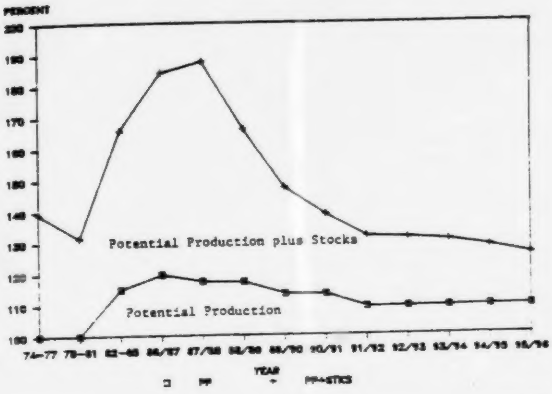


FIGURE 8. POTENTIAL RICE SUPPLY - PERCENT OF TOTAL PRODUCTION

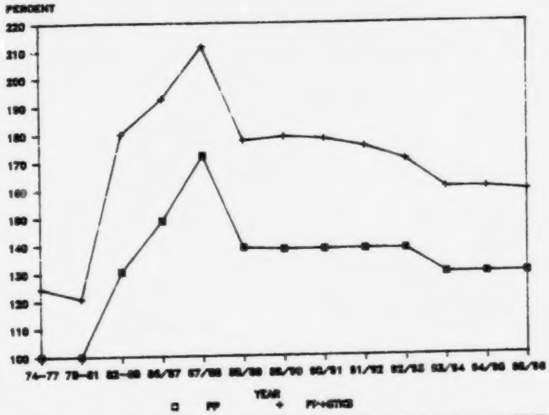


FIGURE 9. RETURNS PER ACRE - WHEAT

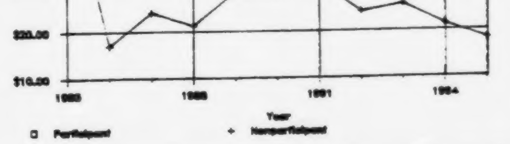


FIGURE 10. RETURNS PER ACRE - CORN AND SOYBEANS

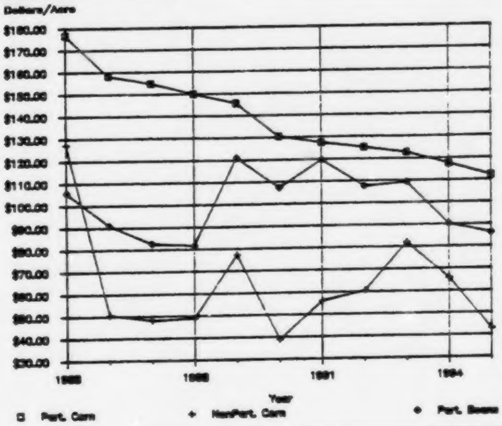


FIGURE 11. RETURNS PER ACRE - COTTON AND RICE

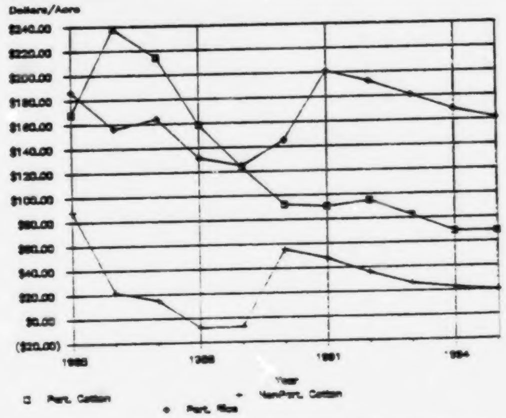


FIGURE 12. NFI AND GOVERNMENT EXPENDITURES

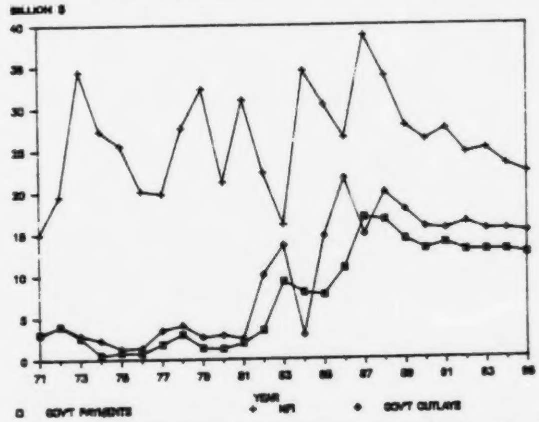


FIGURE 13. GRAIN ACREAGES - CORN, SOYBEANS, WHEAT, COTTON AND RICE

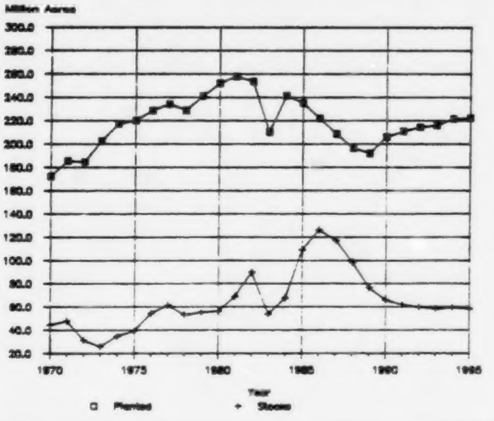


FIGURE 14. FEED GRAINS IMPORTS

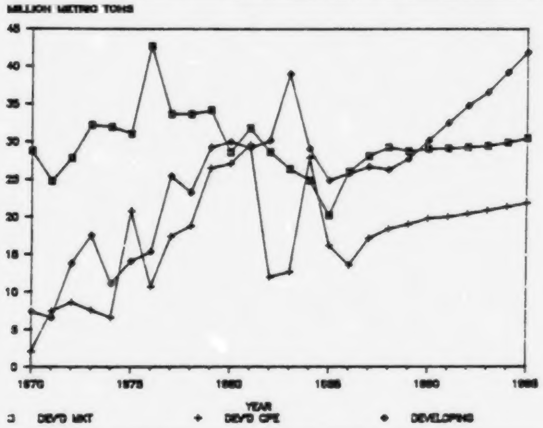


FIGURE 15. COMP. FEEDGRAINS PRODUCTION

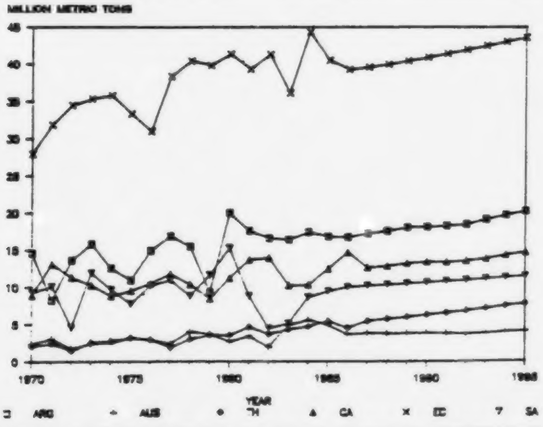


FIGURE 16. FEED GRAINS EXPORTS

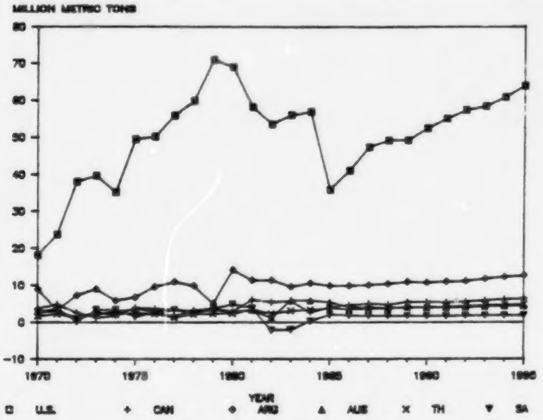


FIGURE 17. FEED GRAINS EXPORT SHARE

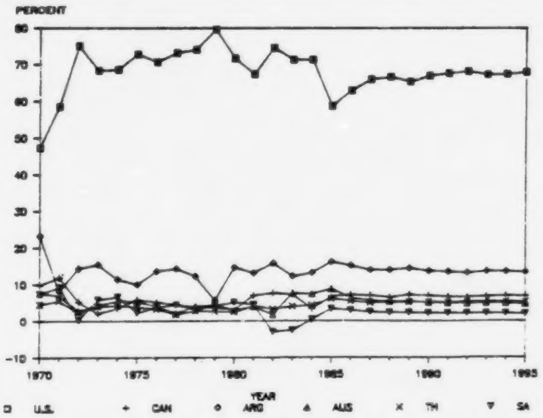


FIGURE 18. SOYBEAN IMPORTS BY REGION

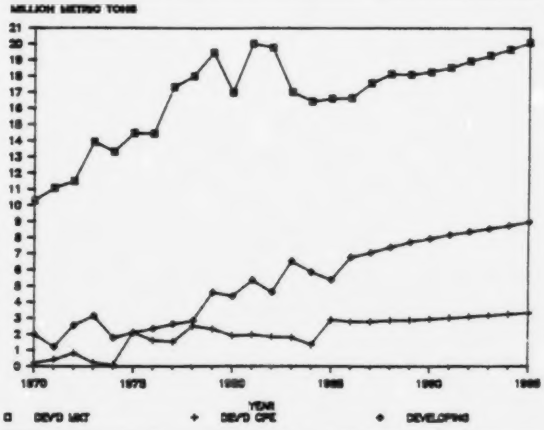


FIGURE 19. EXPORTERS SOYBEAN PRODUCTION

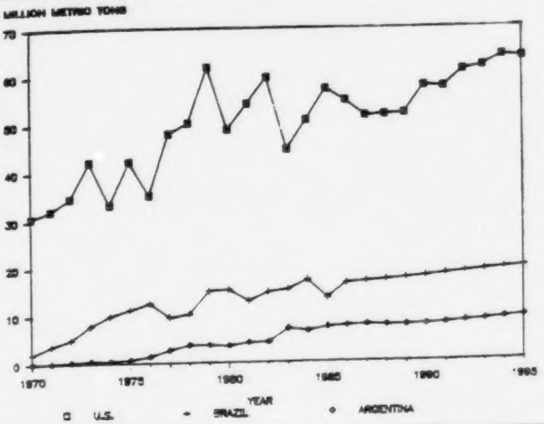


FIGURE 20. SOYBEAN EXPORTS

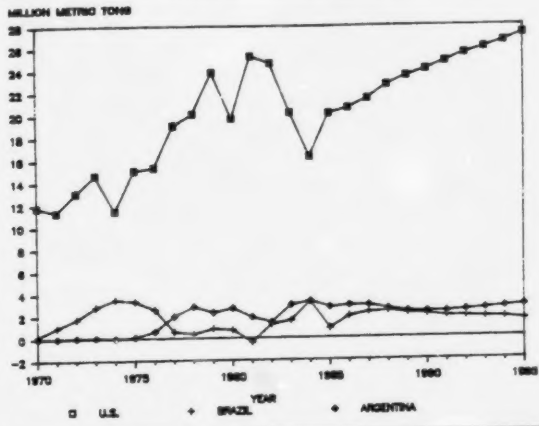


FIGURE 21. SOYBEAN EXPORT SHARE

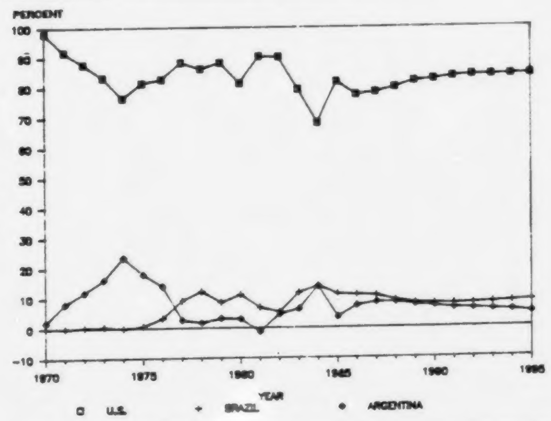


FIGURE 22. SOYMEAL EXPORTS

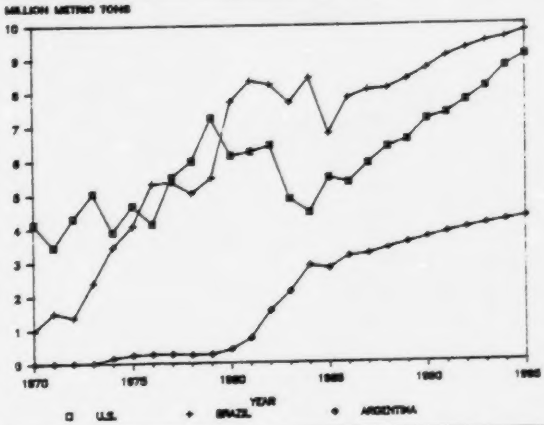


FIGURE 23. WHEAT IMPORTS BY REGION

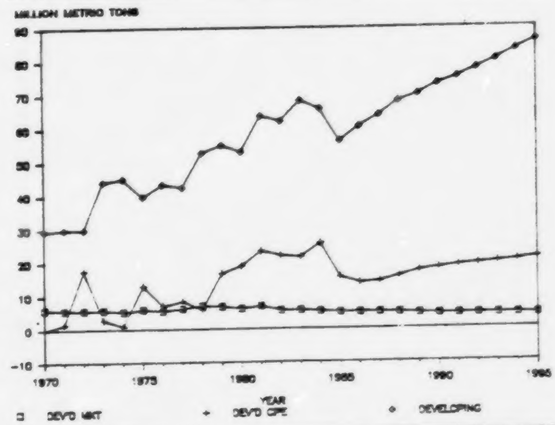


FIGURE 24. EXPORTERS WHEAT PRODUCTION

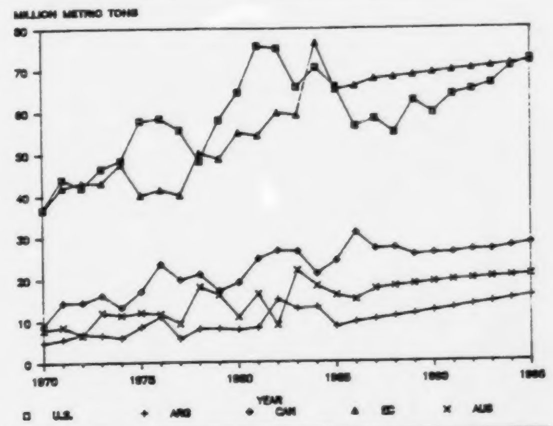


FIGURE 25. WHEAT EXPORTS

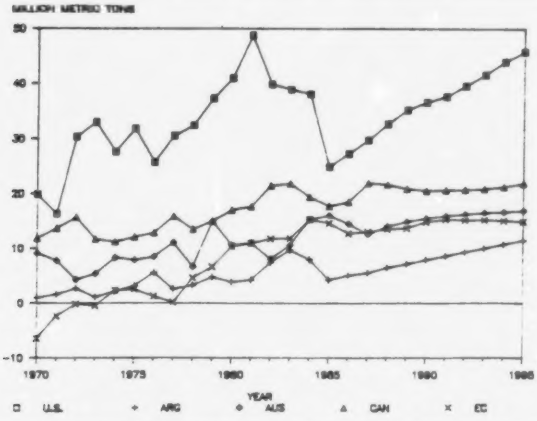


FIGURE 26. WHEAT EXPORT SHARE

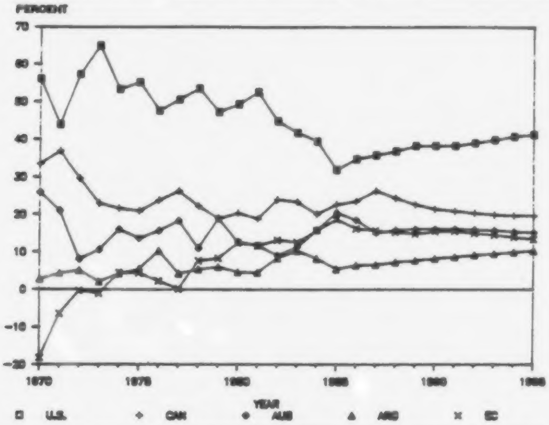
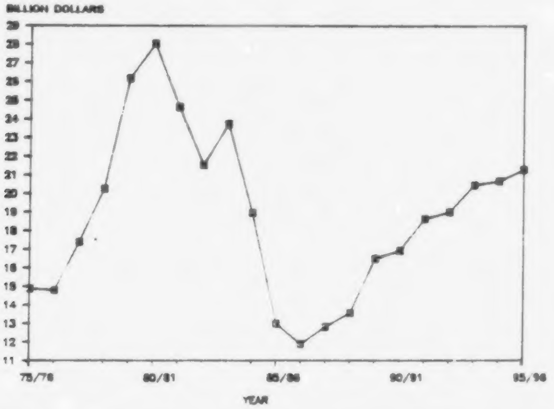


FIGURE 27. VALUE OF U.S. AG EXPORTS (WHEAT, CORN, BEANS, MEAL, RICE, COTTON)



OUTLOOK FOR THE CANADIAN ECONOMY

Judith Maxwell

I'm glad to have this opportunity to share with you the conclusions we have reached at the Economic Council of Canada on the outlook for the Canadian economy over the next few years.

As you know, the Council is an independent research and advisory body. The assessment of medium-term and long-term prospects for economic performance is one of its specialties. The Council is composed of Canadians drawn from every region and from the major sectors of our economy, including agriculture. One of the members is Patrick Shimbashi, a farmer from Taber, Alberta.

Recently we published our 23rd Annual Review, under the title *Changing Times*. Our main theme is that some very strong forces are at work at home and abroad compelling us to alter our patterns of living, working and investing. Nowhere is this more true than in the agricultural regions of Canada. It's no secret to anyone here that some Canadian farmers are in financial difficulty because of high debt and low prices. At the heart of these problems lies the glut of grain on world markets.

This highlights a major development of recent years – the growing interdependence of international economies. We cannot afford to live in isolation in this country. Great hopes have been raised by trade talks with the United States and by the new round of negotiations under the General Agreement on Tariffs and Trade – not least by the fact that agricultural subsidies are on the table for the first time.

FIVE TRENDS IN THE WORLD ECONOMY

With this in mind, it will be useful to begin our look ahead with a review of the global situation. Five long-term trends in the world economy seem especially crucial. All five are directly relevant to Canadian agriculture, though they are felt across all sectors of the economy.

The first is the fierce competition for market share. Newly industrialized countries are able to compete across the board, on commodities, manufactured products and high-value-added goods. To meet this new competition, Canadian firms must lower their break-even costs, by rethinking their production and their marketing. As the strain of competition increases, many countries are resorting to protectionism. They are using subsidies that reduce export prices, countervailing duties that raise import prices and a proliferation of non-tariff barriers. Nowhere is this more damaging for Canadians than in grain markets.

A second trend is continuing technological change. Technology is, of course, an important vehicle for reducing break-even costs. It can bring opportunities to create marketable new products such as canola. But it can also create new challenges. Witness the impact on biotechnology: although scientists have known about the powerful effect of growth hormones since the 1980s only today's genetic engineering will allow the production of commercial quantities. The giants of the U.S. chemical industry are racing to bring them on the market before the end of this decade. That is expected to save U.S. hog producers some $2 billion a year in feed costs and to boost U.S. milk production by some 20% within three years. Milk prices could then drop by 10 to 15%. This is an illustration of the challenges and the opportunities that technological change presents. However, we cannot ignore the dislocations for farmers, managers and workers.

Excess commodity capacity is the third trend that we need to paint into our backdrop. Many commodities are being produced in larger quantities than they are being bought; it's as simple as that. In many cases, skyrocketing prices in the 1970s brought excess production capacity that is often not economic at today's prices. In agriculture, the success of the Green Revolution has had an impact, as one-time importers close the gap between home production and demand, sometimes even becoming exporters themselves.

Fourth, there are dramatic demographic shifts taking place. Population growth in the developed world (Europe and North America) is slowing, while in the third world (Latin America and the Pacific Rim) it's still increasing fast. This is well known. What is perhaps less often appreciated is the emergence of a new middle class in the newly-industrialized countries. Its buying power represents some of the most promising new markets of the 1990s, with all that implies for changing export opportunities. One of the real challenges for Canada is to identify and then sell into these new markets. We must try, for example, to determine what the impact will be on agricultural demand as eating habits evolve in these new markets.

Finally, there is the buildup of international debt burdens – corporate and government. Ten years ago, the outstanding debt of the developing countries was just over U.S. $223 billion. By the end of 1985, according to the secretariat of the United Nations Conference on Trade and Development, that had risen nearly three times, to U.S. $650 billion. Because of its huge trade deficit, even the United States itself is now a major debtor country. The result of all this debt has been a rediscovery of caution among bankers and, despite some slackening, continuing high real rates of interest for borrowers. This, of course, creates a heavy burden for farmers who also built up heavy debt burdens in the 1970s.

So we have these five long-term trends to take into account – fierce international competition, technological change, excess commodity capacity, dramatic shifts in demography and the high level of international debt burdens.

THREE SHORT-TERM ADJUSTMENTS

But we can't think only in the long-term. I know you want to know about the next few years. To focus on that, I'd like to describe the cross-currents being created by three important economic developments of the past two years.

The first of these is disinflation. I might point out that the first three long-term trends I have listed promote disinflation. Prices come down with increased competition. Excess supplies of key commodities like oil and grains have helped to cool off inflation. And technological change often reduces production costs, making it possible to reduce prices.

Slower rates of inflation are a shock to borrowers because they can no longer assume that inflation will erode the value of their debts. They are also a shock to business planners who find that they cannot increase profit margins in order to improve profits. These shocks are aggravated by the fact that interest rates seem to be falling only rather sluggishly towards levels that might seem appropriate for current rates of inflation. This reflects the "risk premium" demanded by lenders who are disturbed by the excessive burden of debt that many borrowers are carrying. They are worried about the need to reschedule the repayment of these debts, and even the risk of default.

The steep fall in oil prices since early 1986 is a second short-term adjustment, and it brings both good news and bad news for Canada. First the bad news: In the near term, the break in oil prices has curbed production, cut back investment, and led to serious layoffs at head offices and in the oil services industry. This, in turn, has denied Canadian governments some of the revenues they expected, compounding the difficulty of reducing budget deficits.

But in the medium term lower oil prices are good news for the Canadian economy as a whole. Energy users will have more money to spend on other things, and that will bring growth in the sectors where they do their spending. So far, we have seen more of the negative than the positive effects from the break in oil prices. But I think we have seen the worst of the negatives, and the positives are still to come.

The third short-term adjustment is currency realignment. After riding high for years, and carrying our dollar along with it, the U.S. dollar has fallen since February, 1985 by as much as 35%, against such key currencies as the Japanese yen and the West German mark.

This adjustment, and the promise it holds for a turnaround in the huge U.S. trade deficit, was long overdue. The loss of jobs associated with the trade deficit is the driving force behind the dangerous tide of protectionist sentiment in the United States.

The response of the current account to a lower-priced U.S. dollar has been sluggish for two reasons. First, the United States is still importing far more than it is exporting. Foreign demand for U.S. goods is weak because of slow growth in Japan, Latin America, and other key markets. There is also strong evidence that foreign suppliers have absorbed some of the costs associated with a lower U.S. dollar in order to keep their share of the U.S. markets – a clear sign of the new competition.

Second, the dramatic swing in the U.S. international investment position in the 1980s has made the U.S. a net debtor country. Consequently, the current accounts now include a sizeable net outflow of interest and dividend payments.

Nonetheless, there are preliminary indications that the trade deficit has stabilized. This is a positive sign for growth in the U.S. economy. (Even a flat trend in U.S. payments in the second half would add 1 percentage point to the annual growth rate for 1986.)

REASONS FOR OPTIMISM

Despite a pause part way through this year, the Canadian economy overall is making impressive gains. After three straight years of healthy growth, real Gross National Expenditure is expected to grow by 3% in 1986. In recent years, we have been outperforming many of the major industrial economies, particularly in Europe.

The big question is: Can expansion continue?

Our answer at the Economic Council of Canada is yes, it probably can. There are a number of things that could go wrong, of course, and a number of weak points, including western agriculture. I'll come back to them later. But we see a number of reasons for optimism, and I'd like to take a moment now to review them with you.

I've mentioned some short-term factors that point to growth in North America. First, the disinflation that is working its way through the economy; and while real interest rates remain high, they won't be going higher. Second, the worst of the adjustment of lower world oil prices is now behind us. So we can look forward to positive impacts: lower retail prices and, as a result, more consumer dollars will stimulate growth in other sectors. Then, we can expect stabilization of the U.S. trade account balance – perhaps even improvement.

A second reason for optimism is evidence of adaptation by Canadians to the tough competitive environment. Break-even costs in mining and oil are down. In manufacturing, the productivity record has been very encouraging since 1981. But we will have to wait a few more years to determine whether there is a sustained recovery.

On the agriculture side, while grain prices are low, this year's crop is up. Agriculture Canada forecasts an increase in wheat production nearly 30% over the 1984-85 level. Given weak prices, that may not sound like such good news. But good supplies of a high quality product could make for exports of 18.5 million tonnes compared to 17.7 million tonnes last year. So things could be worse; we might have had to deal with a less saleable product as well as with low prices.

Third, there are no signs of excess demand or cyclical imbalances in Canada and little threat of renewed inflation to trigger restrictive policies. The federal government will have to concentrate fiscal policy on pressure for deficit reduction, but monetary policy can be more accommodating.

MEDIUM-TERM OUTLOOK

Let me turn now to the details of the medium-term outlook for the Canadian economy overall. It is drawn from a basic projection, or base case that assumes lower interest rates and oil prices, a reasonably favourable world economic outlook, and an improved mix of monetary and fiscal policies, both in the United States and Canada.

If these assumptions hold, then the Economic Council believes that Canadians can look forward to sustained economic growth, moderate inflation and a gradual reduction in the unemployment rate.

The commodity price slump, however, is likely to result in sharply increased regional pressures and may, to some extent, undermine prospects for a strong surge of fixed investment by business in regions that depend heavily on resources for their prosperity.

Over the next five years, growth in real Gross National Expenditure will average about 3% a year. There may be a pause in 1989, when growth will slacken to 1.3%, setting the stage for a recovery averaging 3.7% from 1992-96.

This means that Canadians will have some solid ground under their feet as they move to meet the challenges of the changing times we highlighted in our Annual Review. On the other hand, it cannot be allowed to blind us to some big pockets of hardship, notably in Western Canada, and the Atlantic region.

We expect that over the next five years, an unusual combination of factors will keep inflation low, compared with recent years – possibly the lowest since the 1960s. We expect an average rise of 3.3% a year in the Consumer Price Index from 1986-91 – just about the same as this year's projected 3.2%.

Further down the road, in the 1992-96 period, we expect inflation to rise to an average of 4.1% a year, but that is still pretty good when you compare it with the double-digit inflation we experienced only a few short years ago.

We'll have to wait a bit longer for a rosier outlook for unemployment. We foresee only a small improvement in unemployment rates in the near term. Over the next five years, it is likely to remain at around 9%. This is because growth in the labor force, averaging 1.6% a year, will closely track the increase in employment, averaging 1.9%.

Later, however, from 1991 to 1966, growth in the labor force will drop to an average of 1.4%, while employment growth remains at 1.9%. This will permit a gradual decline in the unemployment rate to below 7% by 1996.

One highlight is that the Council is optimistic on productivity. We believe that the long slump of the 1970s is over and that productivity will pick up in the 1990s. Output per person hour will rise an average of 1.7% a year from now until 1991 and will achieve an even better average of 2.4% a year in the 1992-96 period.

Average growth in real Gross National Expenditure of about 3% a year, moderate inflation, hopes of lower unemployment, rising productivity – all of this will underwrite strong gains in real incomes. We expect the real incomes of Canadians to rise by around 10% over the next five years.

It is very difficult to forecast the current-account balance – our broadest measure of foreign transactions – with any reasonable degree of accuracy. But I have to tell you that we are less optimistic now than we were last year.

The deterioration in the prices of our exports, resulting from a poor outlook for primary commodity prices and from the collapse in oil prices, explains most of the difference. For example, the surplus associated with the energy account is now expected to be about $6.5 billion in the 1986-91 period. This is less than half the surplus projected in previous years, and knocks about 1% off of GNE over the period. Hence our base-case projection calls for a current-account deficit in the medium term.

Thanks to our improved inflation performance and improvement in the federal deficit, the value of the Canadian dollar, is expected to hover in its present range vis-à-vis the U.S. dollar.

RISKS TO THE OUTLOOK

When we look ahead over the next 10 years, it's only sensible to recognize the risks.

First, as I have already pointed out, assumptions in our base case could prove to be unfounded. Or there could be major new policy initiatives, at either federal or provincial levels, that make an impact. So, for example, where we project an average rise of 3% a year in real Gross National Expenditure from 1986 to 1991, we see a possible range from 2.1% in a low-growth scenario to 4% in a high-growth scenario.

The low-growth scenario would be the product of higher oil prices, smaller gains in productivity, a weaker Canadian dollar and a less favorable U.S. performance. High growth is based on the opposite – lower oil prices, greater productivity growth, a stronger Canadian dollar and better U.S. performance.

Continued protectionism is another risk. The Council believes that protectionism in the United States is seriously hindering Canadian access to its major export markets. In other words, the *status quo* is eroding under our feet.

To highlight this concern, the Council has simulated the effects on growth and employment of two contrasting scenarios – freer trade with the United States on the one hand, and, on the other, a protectionist trade war. The results are quite striking.

If Canada were to phase in freer trade and remove all tariffs and some non-tariff barriers over a 10-year period, and if industries were to adapt in such a way as to produce a 5% gain in productivity, we would see an increase in total production of around 3.3% by 1995. Even more impressive, approximately 320 000 new jobs would be created in net terms.

Not surprisingly, the protectionist scenario shows just the opposite trend. If the United States were to impose a 20% surcharge on most manufactured goods (autos excluded), and other countries like Canada were to respond in kind, by 1995 total production in Canada would be 5% below the base case and employment would drop by over 500 000. The unemployment rate would rise by 2-12 percentage points.

The basic message here is that protectionism destroys jobs while improved access to export markets stimulates job creation. Whether we should sign an agreement on freer trade with the United States must be judged when the precise terms of a proposal are known. Meanwhile, it would be folly not to seek an acceptable agreement.

Slower-than-projected U.S. growth is the key threat that should slow our growth. Given that we are a trading nation and that 75% of our trade is with the United States, the outlook for the U.S. economy is the single most important external factor in medium-term projections for Canada ... I think the odds for continuing strength in the

U.S. economy are pretty good, but there are, of course, problems to be watched closely. A lot depends on the trend in the current account balance I discussed earlier.

IMPLICATIONS FOR CANADIAN AGRICULTURE

The major challenge facing the farm sector is how to respond to all the negative signals coming from the global marketplace. It is a tough environment in which to distinguish the underlying trends from the short-term aberrations. This kind of medium- to long-term analysis is the primary focus of the work of the Economic Council of Canada, and the Council is now in the early stages of a major new study of both the market potential for Canadian grain and related products and the scope for adjustments by the farm sector.

We realize that there is a great deal of useful research available in this area, both here and abroad. But we feel that it is time for a national organization like the Council to interpret the global facts from a Canadian point of view. We must also piece together an integrated view of all these facts and figures in order to come up with a coherent set of objectives and of guidelines for policy.

We are still trying to get funding for this project. When and if we do, I would like to come back to this conference to report to you on the results of our work. In the meantime, I hope this short review of some of the key factors influencing our economic outlook has provided you with a useful backdrop to the proceedings of these two days.

FIGURE 1. PRODUCER PRICE INDEX (FINISHED PRODUCTS, U.S.) 1966-1995

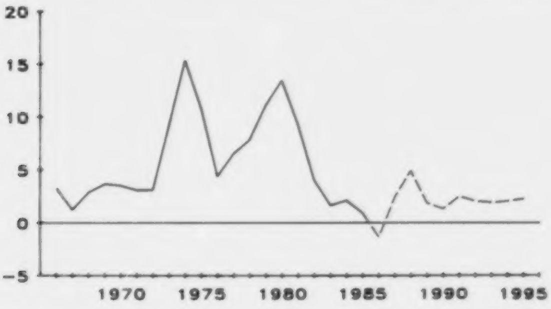


FIGURE 2. REAL INTEREST RATE, CANADA, 1966-1995

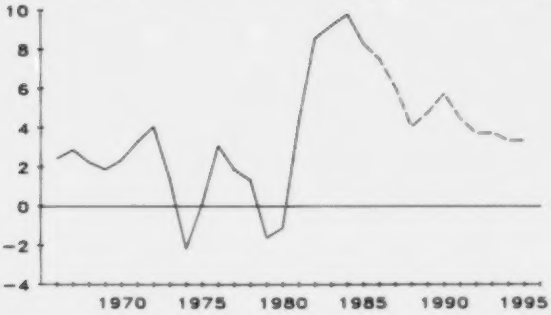


FIGURE 3. WORLD COMMODITY PRICES, TOTAL, 1966-1985 (BASE 1980 = 100)

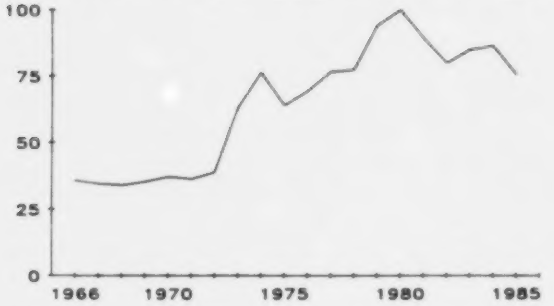


FIGURE 4. U.S. DOLLAR EXCHANGE RATE, 1967-1995 (TEN-COUNTRY AVERAGE)

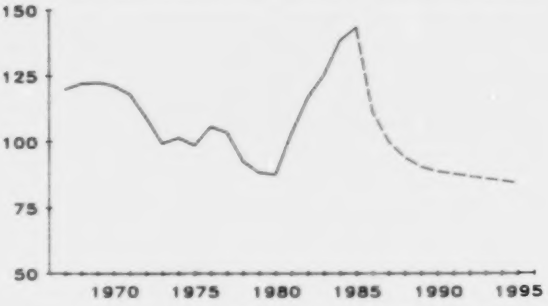


FIGURE 5. CURRENT ACCOUNT BALANCE IN PERCENTAGE OF GNE UNITED STATES, 1966-1995

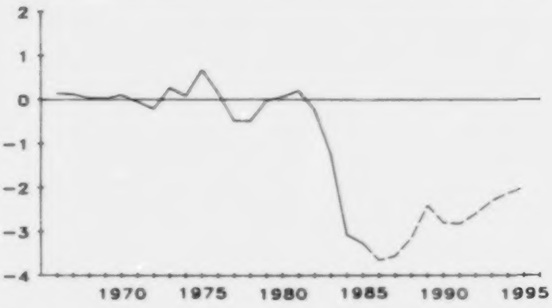


FIGURE 6. NET INTERNATIONAL INVESTMENT POSITION, UNITED STATES, 1970-1985 (BILLIONS OF DOLLARS)

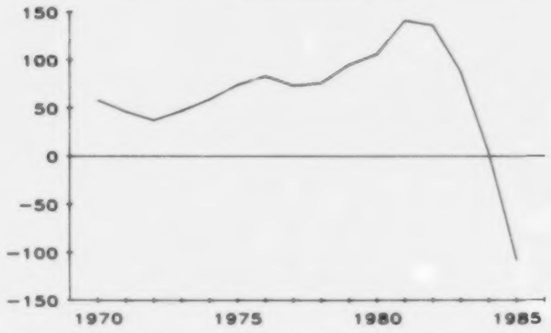


FIGURE 7. MANUFACTURING PRODUCTIVITY (VALUE PER HOUR), CANADA, 1961-1985

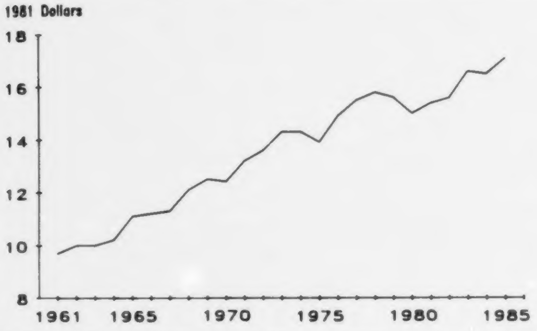


FIGURE 8. FEDERAL DEFICIT IN PERCENTAGE OF GNE, CANADA, 1966-1996

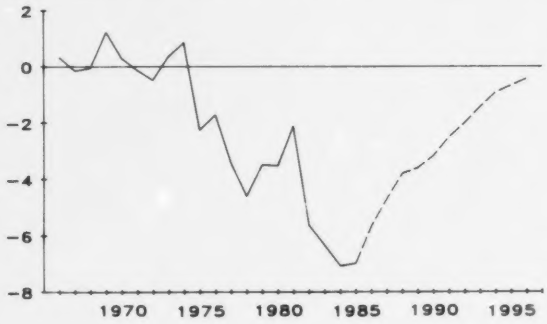


FIGURE 9. AVERAGE ANNUAL RATES OF GROWTH IN GDP, CANADA

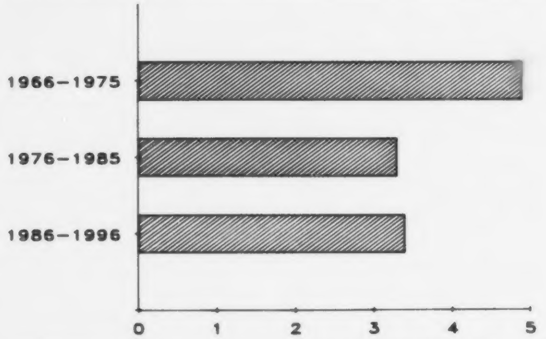


FIGURE 10. AVERAGE ANNUAL RATES OF GROWTH IN THE CPI, CANADA

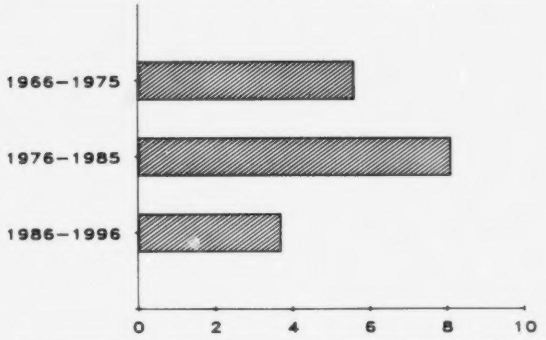


FIGURE 11. AVERAGE ANNUAL UNEMPLOYMENT RATE, CANADA

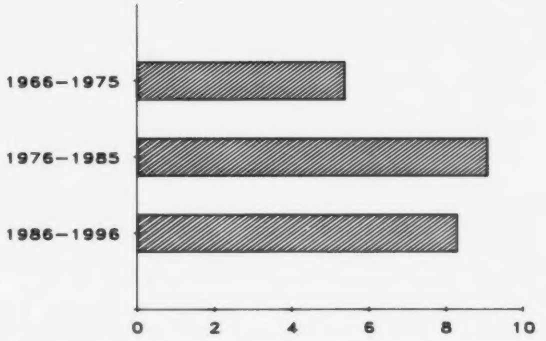


FIGURE 12. CURRENT ACCOUNT DEFICIT IN PERCENTAGE OF GNE, CANADA, 1966-1996

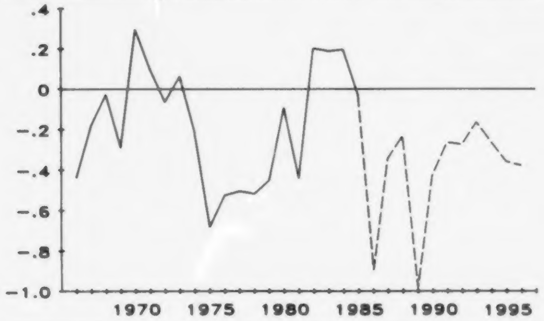


FIGURE 13. PERFORMANCE BAND GROWTH IN GDP, CANADA, 1986-1991

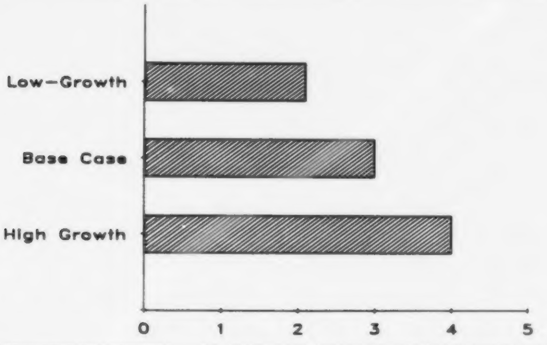
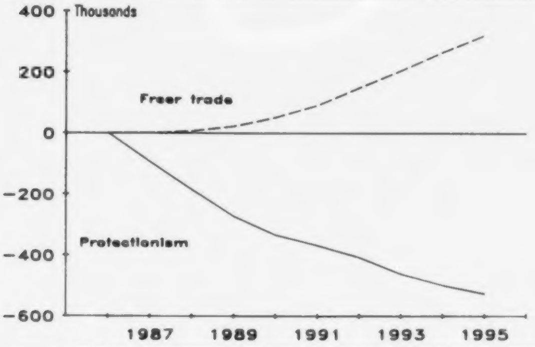


FIGURE 14. IMPACT ON EMPLOYMENT, CANADA, 1986-1995



PLENARY SESSION II

CANADIAN COMMODITY MARKETS OUTLOOK 1987-1991

Bruce Huff

INTRODUCTION

This presentation provides an overview of the outlook for commodity markets for 1987 and 1988 which will be discussed tomorrow in detail in the four commodity market sessions. As well, the presentation includes a medium term forecast (five years) to 1991. The implications of these commodity forecasts will be the subject of the next three papers on food markets, on agricultural trade and on farm income and costs. Finally, this presentation discusses the risk in the forecast. While there are certainly many risks that could be discussed, this presentation concentrates only on the livestock sector.

The assumptions used for foreign agricultural markets and the Canadian economy are drawn from the U.S. Department of Agriculture, Chase Econometrics, Food and Agriculture Policy Research Institute and the Conference Board in Canada.

FORECAST RELIABILITY

At last year's Outlook Conference, Agriculture Canada forecast that 1986 commodity production would rise 4% and prices would remain unchanged. This forecast did not fully anticipate the changes emanating from the U.S. Farm Bill, the good weather in Western Canada nor the difficulty in forecasting the turning points for both beef and pork.

For the 20 price and production variables produced, all forecasts correctly predicted the direction, except for two variables, the production of coarse grains and of oilseeds. For the 14 non-grains variables, the average mean percent error was 2.5. The U.S. Farm Bill provision for dairy herd buyout not only delayed the downturn in beef production but was an important factor restraining beef prices. The downturn in pork production the second half of this year was a surprise to analysts in both Canada and the U.S. and price increase was accentuated from a strong demand for stocks. For the six grains variables, good weather and the extent of U.S. farm program changes results in an average mean percent error of 16. Given the uncertainty of the Farm Bill and its implication, perhaps it is understandable why pork producers were reluctant to commit resources.

EXTERNAL FACTORS TO CANADIAN COMMODITY MARKETS

If anyone ever doubted it, 1986 should have again demonstrated that economic factors outside of the Canadian agricultural markets are critical to their prices and productivity, and indeed if we simply focus on Canadian markets it is like arranging the deck chairs on the Titanic.

Nearly half of Canada's agricultural production is exported and all commodity sectors are touched to some degree by international markets. The provisions of the 1985 U.S. Farm Bill introduced much lower market prices for grains and intensified the competition in export markets. Its impact on Canadian grain market prices was almost immediate and similar in magnitude to the decline in the U.S. For livestock, the lower grain prices will be the dominant influence on the medium term. Even the supply-managed commodities in Canada (dairy, poultry) are influenced through lower input costs and product demand.

The macroeconomy in both Canada and the U.S. is also critical to the agriculture sector. The Canadian dollar has depreciated 38% against the U.S. dollar since 1976. However, in 1986, there has been little change against the U.S. dollar but there has been a 26% depreciation against the Yen and 17% against the European Currency Unit (ECU) during 1986. However, there is little impact from these depreciations as both these economies are highly insulated from world commodity markets. In terms of other agricultural exporter and importer country currencies, the Canadian dollar may have even appreciated, and thus overall, resulted in little increase in prices or demand for Canadian products. Interest rates in Canada are generally above those in other developed countries such as the U.S., Europe and Japan and thus affect our competitiveness. The slow economic growth expected in Canada for the next few years will limit the increase in domestic demand. It is clear that Canadian agriculture would gain from economic policies which provided lower exchange rates, low interest rates and low levels of inflation.

AGRICULTURE SECTOR OUTLOOK

In 1986, Canadian agriculture faced the usual degree of uncertainty. The provisions of the U.S. Farm Bill, determined early in the year, set the stage for very low crop prices. With western Canada coming off two consecutive years of drought, an increased volume of grain production was anticipated. The beef sector appeared to remain in a liquidation phase with continuing depressed prices. Lower grain prices were a relief which improved livestock profitability, but the U.S. dairy buyout held the lid down on beef prices until mid year. An expansion phase for the beef sector now appears to be in process. The hog sector entered the down side of its production cycle, just as grain prices dropped causing record high profitability conditions. Looking ahead, the main concern will be the stability of grain markets, and their impact on the livestock sector.

Total production in Canadian agriculture is estimated to be up 9% in 1986 largely from good weather and a recovery from the droughts of 1984 and 1985 in the prairies. If more normal weather occurs in 1987, output will likely fall 3% and then rise slowly (2-3% annually) through 1991. The pattern of growth in the livestock sector will contribute significantly to this change in output, initially, from higher pork and poultry production and later from higher beef production. Crops production is expected to increase about 3% each year, after 1987.

Average commodity prices in Canada fell sharply (3%) again in 1986 following a very large 1985 decline. Average commodity prices will likely continue to decline slowly until 1990 and the 1991 level is expected to be 11% below the 1984 peak. Grain prices are forecast to decline through the next two crop years. Livestock prices are expected to be lower during 1988-1991, particularly hog and, to lesser extent, cattle.

The full impact to producers of these price declines, arising mainly from depressed international commodity markets, however, are cushioned in Canada by stabilization programs (such as the Western Grain Stabilization Program and the Agriculture Stabilization Program). Since these are based on 5 year moving averages and are indexed for costs, support levels will nevertheless decline over the next few years.

COMMODITY MARKETS OUTLOOK

Wheat

In 1986, the large increase in wheat production (31%) was mainly the result of higher yields from improved moisture conditions following two years of drought. There was a small increase in acreage (3%). Assuming normal yields, production will likely be down 4 million tonnes (mt) (13%) in 1987 and 0.6 mt (2%) in 1988. In both years, there is a smaller acreage expected with some shifts to coarse grains. Higher wheat acreage is expected in 1989 and 1990 with correspondingly lower coarse grain acreage, as acreage shifts among grains depending on relative prices and farm stock levels.

It is interesting to note that the lower grain prices are forecast to have only a very small influence on total grains and oilseeds acreage. A small increase in summerfallow acreage is expected in 1987, but thereafter it should continue to decline and total acreage increase marginally. The growth rate in total grains and oilseeds production, however is forecast to be below the previous 10 year average.

Ending wheat stocks are expected to increase sharply in July 1987, perhaps as much as 8 mt from year earlier levels and the highest level since 1973. Ending stocks could increase again in July 1988 and remain near this level (17 mt) through 1991. Wheat exports are also expected to rise, reaching 25 mt by 1991.

Wheat prices in 1986-87 are expected to decline over 30%, with further small declines in the next two years in response to lower international prices. Prices are expected to increase during 1989-91, but to remain well below last year's level.

Coarse grains

Coarse grain production was up 11% this year, despite lower corn production. With lower yields, coarse grain production is expected to decline 10% in 1987. In 1988, production should increase again but fall in 1989 and 1990, as areas shift into and out of wheat acreage, depending on relative prices and grain stock levels on farms.

Coarse grain exports are expected to rise in 1986-87 and remain above 6 mt through 1991.

Coarse grain prices are expected to drop sharply in 1986-87, by more than 20% followed by smaller decreases in the next two years before an upturn is seen in 1989-91 crop years.

Oilseeds

Canadian oilseed production was up 9% in 1986 from increased yields. Lower acreage and more normal yields will reduce 1987 production by 16%. The expected decline in acreage is in response to high carryover stocks of canola and lower edible oil prices. Higher oilseed production is also expected in 1990 and 1991, as stocks decline and prices increase. Production in 1991 is expected to be slightly higher than the 1986 level.

Lower 1986-87 canola prices are in response to lower world edible oil prices. Oilmeal prices are not expected to decline from 1985-86 levels. Somewhat higher edible oil prices by 1988 crop year will provide some increase in prices for canola. Soybean prices are expected to remain near 1985-86 levels for the next five years, because of the strength in demand for oilmeal from expanding livestock herds.

Red meats

Profitability in the livestock sector (beef and hogs) improved substantially since mid 1986 as grain prices declined and livestock prices (especially pork) increased causing record levels of livestock product to feed price ratios. As a result, there is an expectation that there will be a very strong production response to the increased profitability during the medium term but there is considerable uncertainty as to its timing and magnitude and the price implications arising from the interactions among demand for beef, pork and poultry. Our analysis draws heavily on the previous experience of producer and consumer responses to prices and costs.

For the past ten years (1976-85) there has been virtually no growth in beef production in Canada. However, there is evidence that herd rebuilding in Canada has started with a substantial decline in cow slaughter throughout 1986 and heifer slaughter in the second half of 1986. The large increase in feeder calf prices that has occurred this fall will certainly add more incentive for herd expansion. We expect herd expansion to continue very strong through 1991. A sharp decline in beef production is expected in 1987, followed by a smaller decline in 1988. Increased beef production could occur as early as 1989. The expansion is likely to be larger in Western Canada than in Eastern Canada.

Combined with lower production and higher pork prices, there should be a sharp rise in beef prices in 1987, especially in the first half of the year. Lower poultry and pork prices will likely limit beef to a small price increase in 1988. Thereafter, these factors combined with increased cattle marketings are expected to cause lower beef prices.

The production response to lower grain prices for pork will occur more quickly and to a larger degree than for beef. Increased pork output is expected as early as mid-1987, and to continue increasing through 1990. The largest production increase is expected in 1988 (7%) and the total increase over the four years is expected to be 12%. The increase in the west is expected to be double that in the east. These projected increases for pork production are modest compared to the rate of growth during the past decade of 7.5%.

Average hog prices in 1987 are expected to be slightly higher than 1986, especially in the first half but prices are expected to decline rapidly from mid-1987 through 1991. Index 100 hogs Toronto in 1991 are expected to average 41% lower than in 1987, near $107/ckg.

Poultry

In response to continuing strong demand, substantially higher chicken production is expected during 1987-89 (5-9%), followed by smaller growth during 1990-91 (2-3%). With lower grain prices, chicken prices are also expected to decline during 1987 and 1988 but as grain prices increase, chicken prices also rise during 1990-91 (approximately 5% annually).

For turkey much higher production is expected for the next two years (7-8%). For 1989-1991 production increases will be moderate (2%). Lower turkey prices are expected in the next two years followed by higher prices in 1989-91, mainly reflecting similar changes in grain prices.

Egg production will likely remain near current levels during 1987-91 with lower prices in 1987 and higher prices in 1988-91.

Dairy

Milk production is expected to increase slightly in 1987 and 1988 with additional milk going for both fluid and manufacturing use. Little growth in production is expected for the following 3 years (1989-91). The long term trend of more manufacturing milk being used for cheese and less for butter is expected to continue. Support prices for manufacturing milk for the next three years should increase only moderately (1-3%) with a slightly higher rate for 1990-1991 (3-4%). Price increases, however, are expected to be well below the 1976-85 rates.

Horticulture

With higher prices in 1986-87 from smaller North American supplies, Canadian potato production is expected to increase in 1987 and remain unchanged in 1988 at about 3 mt. Lower prices can be expected in 1987 and 1988.

A smaller apple crop in North America has also resulted in higher prices in 1986-87 but this has been constrained by higher European supplies. Large citrus juice supplies will also depress apple juice prices. The upward trend in Canadian apple production is expected to resume in 1987.

World sugar prices could strengthen moderately in 1986-87 as stocks will likely decline again.

World tobacco demand may grow slowly (1-1.5%) mainly in developing countries. Canadian demand is expected to decline substantially (5%) in 1987 and exports are likely to remain unchanged. World prices are unlikely to increase.

FORECAST RISKS

An important risk in this forecast concerns the outlook for red meats because of the extremely large adjustments likely to occur. World grain prices should continue to be set by the United States and to a considerable degree by the Secretary of Agriculture. A wide-ranging debate in the U.S. Congress is likely on modifications to the 1985 Farm Bill, but predicting what, if any, change will be difficult. Weather conditions in major producing regions can also cause considerable varability in the short term. Nevertheless, any change in feed grain prices will be critical to the pattern of livestock adjustments.

For red meats, profitability as measured by the livestock product to feed price ratio is at record levels (Figure 1 and 2). Our forecast indicates that these ratios will decline during 1988 to 1991, as grain prices rise and livestock prices fall. The direction is clear but the exact adjustment path could differ substantially from our forecast. For example, U.S. beef and hog producers may be reluctant to expand production quickly as forecast because they expect hog prices to fall quickly or grain prices to rise or because they have difficulty in obtaining sufficient credit to expand. In this case, hog prices would remain above the base forecast level throughout the next five years. For example, if U.S. hog producers expand at about half the rate expected, in 1988 and 1989, U.S. hog prices would be then 10-12% higher during the next five years (1991 price of $U.S. 36/cwt and $116/ckg in Canada). However, given such large incentives, U.S. hog producers may expand output at twice the expected rate causing prices to decline by another 15% in 1988 and 1989 (1989 price of $U.S. 31 and $113/ckg in Canada). However, these prices could be higher than our base forecast by 1991, as the turnaround in production would occur more quickly than forecast.

Another area of uncertainty is the extent of the increase in red meat prices in 1987. Beef demand may not be as sensitive in the short run to higher prices as we anticipate. As a result, beef prices could be much higher than forecast in early 1987, as both beef and pork production in North America could be down substantially.

SUMMARY

The most significant factor affecting the medium term outlook for Canadian agriculture is the sharp drop in global grain prices. The lower prices are expected to result in only a moderate production adjustment in grains, but will stimulate very large increases in livestock production over the next five years. The increase will start as early as 1987 for pork and poultry and 1989 for beef. Consequently, total agricultural production is expected to continue relatively strong growth through 1991.

Livestock and poultry prices will decline as production increases in North America. Prices in Canada for grains declined sharply in mid 1986 and are expected to slide further in the next two crop years before a recovery occurs as a result of reduced grain stocks. Average farm prices by 1991 are expected to decline to the same level as

1979. If the farm price index declines as projected, this would be the longest period of declining prices in more than 50 years. Stabilization programs will cushion this decline in prices, but support levels will adjust to the new lower prices over the forecast period.

Forecasting the exact path of the livestock production adjustment could prove to be difficult as the industry embarks on a major expansion phase. Modifications in grain prices from possible amendments to the U.S. Farm Bill could seriously affect the livestock adjustment path.

FIGURE 1. GROSS DOMESTIC PRODUCT IN AGRICULTURE

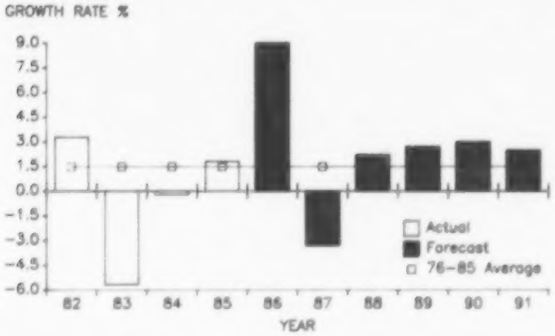


FIGURE 4. WHEAT PRICES

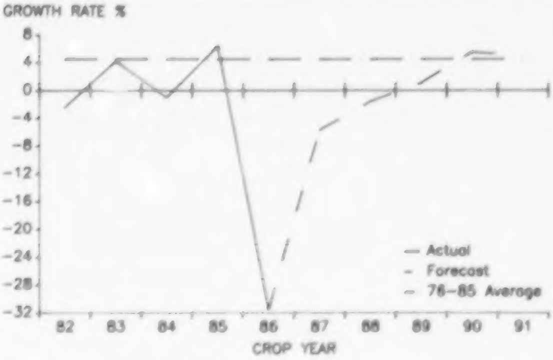


FIGURE 2. AGRICULTURAL PRICES

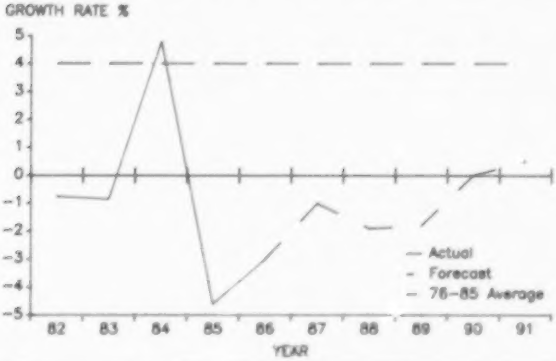


FIGURE 5. COARSE GRAINS PRODUCTION

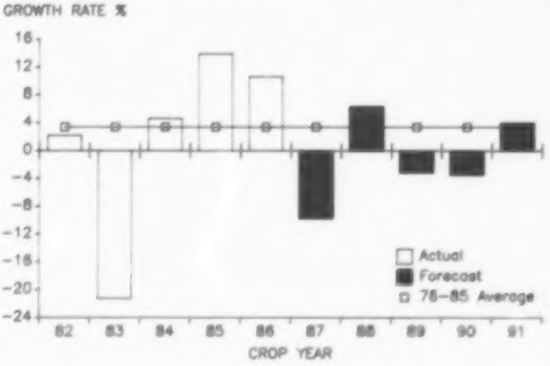


FIGURE 3. TOTAL WHEAT PRODUCTION

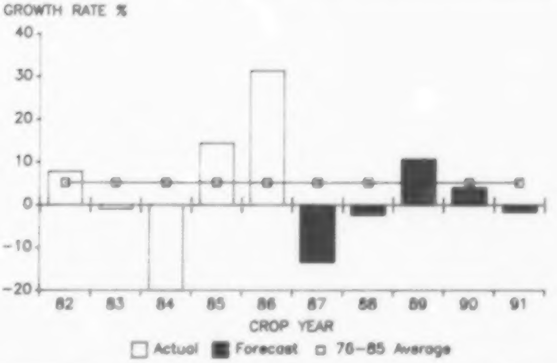


FIGURE 6. BARLEY PRICES

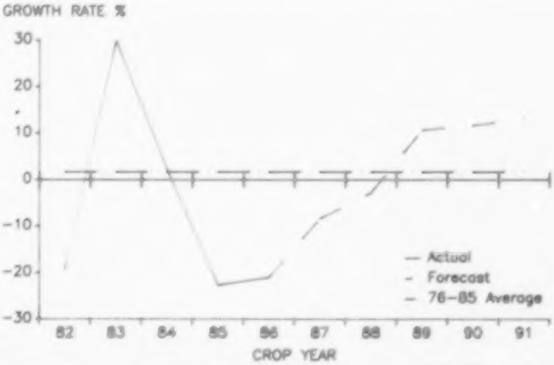


FIGURE 7. OILSEED PRODUCTION

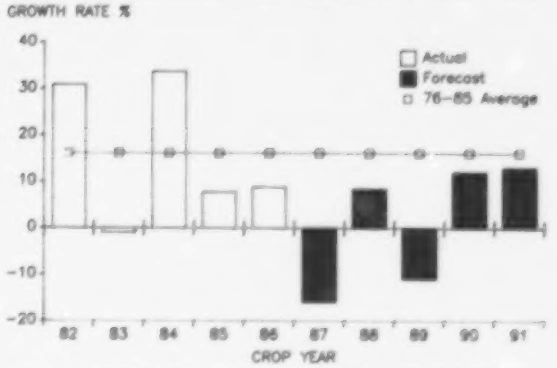


FIGURE 8. RAPESEED PRICES

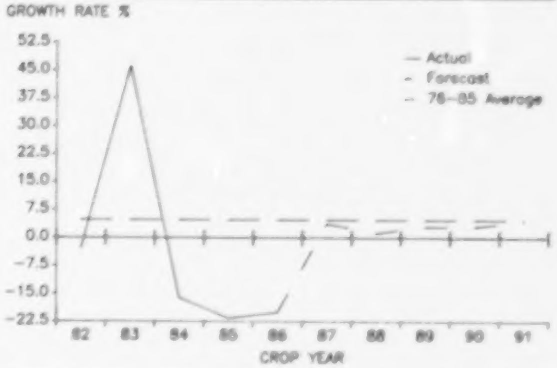


FIGURE 9. BEEF PRODUCTION

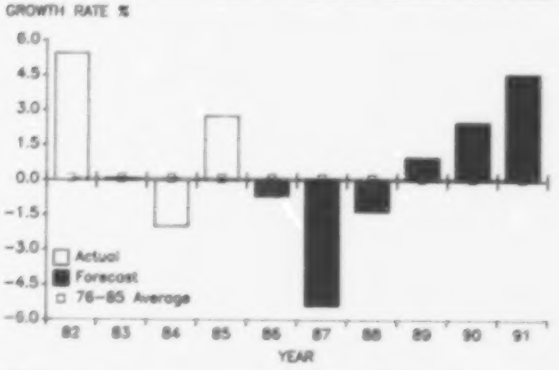


FIGURE 10. BEEF PRICES

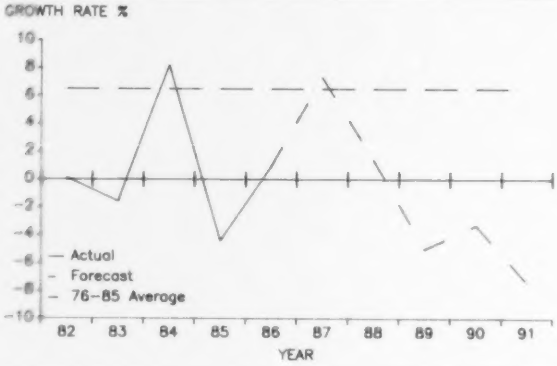


FIGURE 11. HOG PRODUCTION

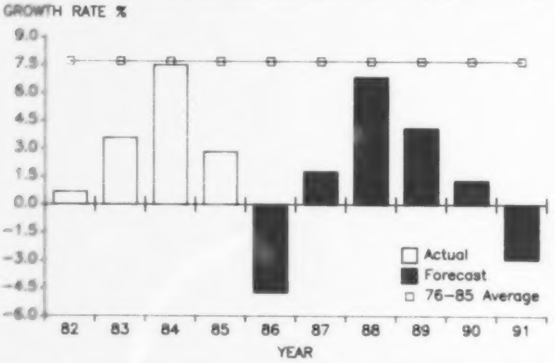


FIGURE 12. HOG PRICES

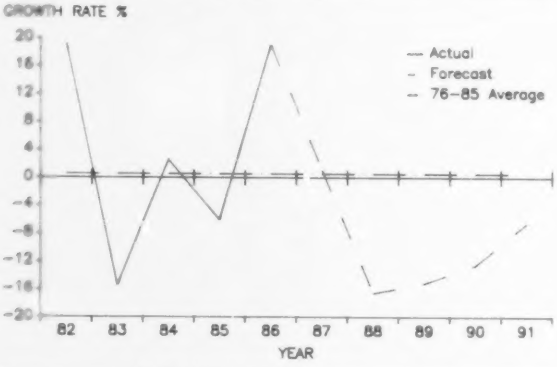


FIGURE 13. CHICKEN PRODUCTION

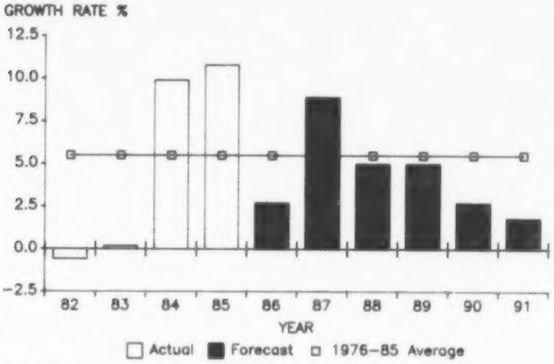


FIGURE 14. CHICKEN PRODUCER PRICE

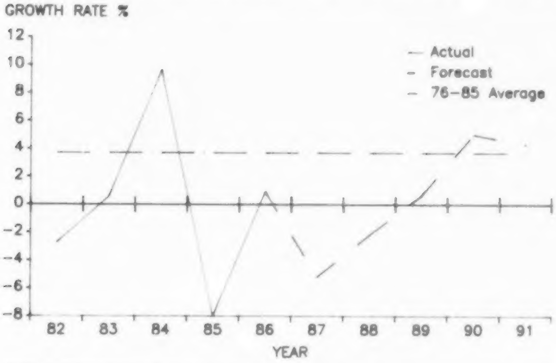


FIGURE 15. TURKEY PRODUCTION

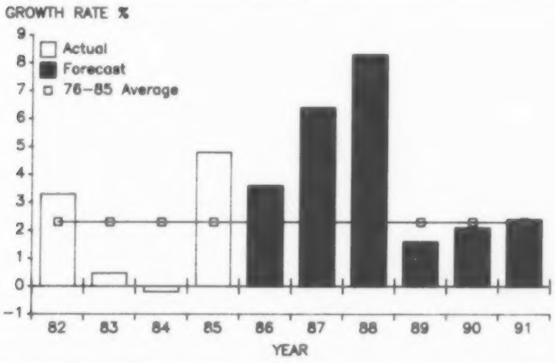


FIGURE 16. TURKEY PRODUCER PRICE

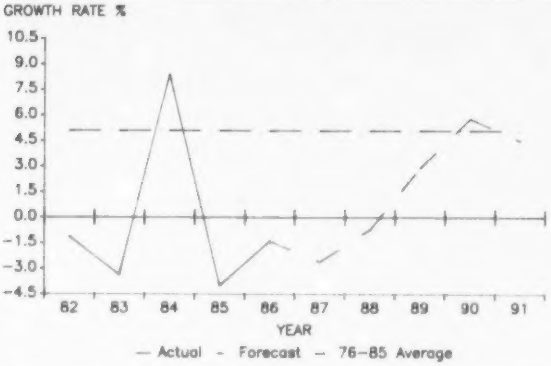


FIGURE 17. EGG PRODUCTION

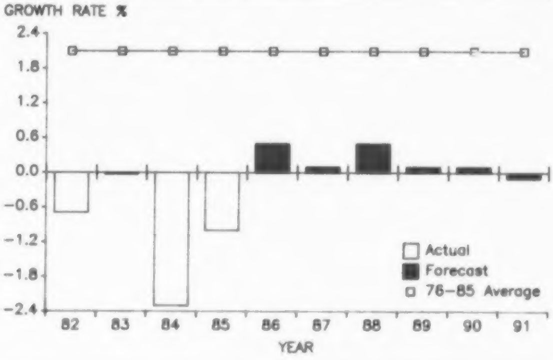


FIGURE 18. EGG PRODUCER PRICES

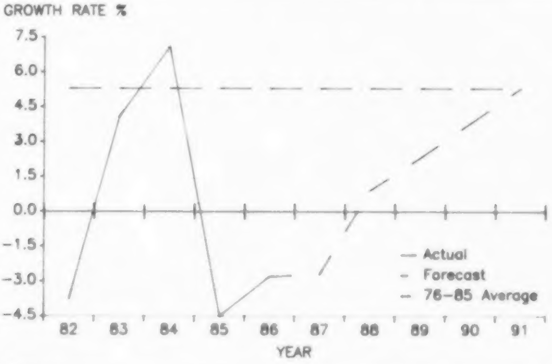


FIGURE 19. CANADIAN MILK PRODUCTION

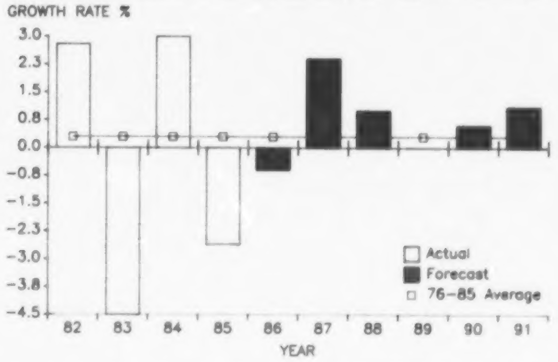


FIGURE 20. CANADIAN INDUSTRIAL MILK TARGET PRICE

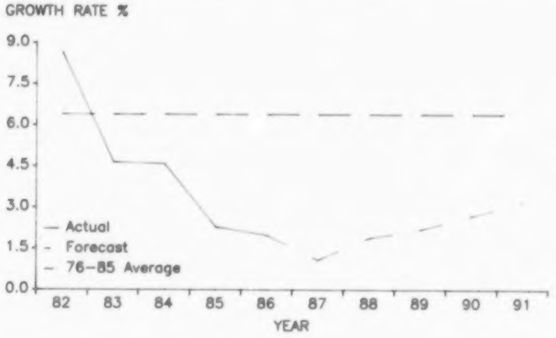


FIGURE 21. STEER-BARLEY RATIO

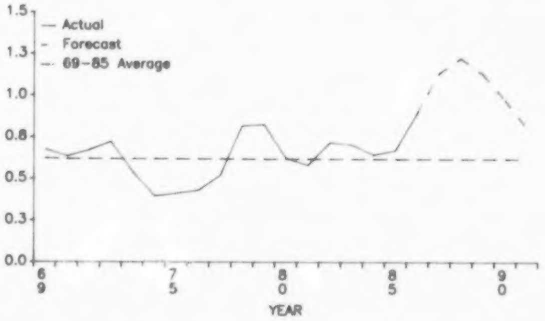


FIGURE 22. HOG-CORN RATIO

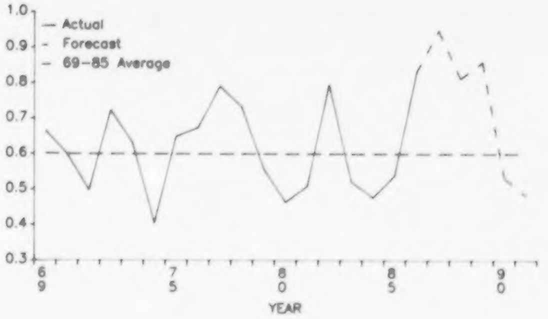


FIGURE 23. CANADIAN HOG PRICES

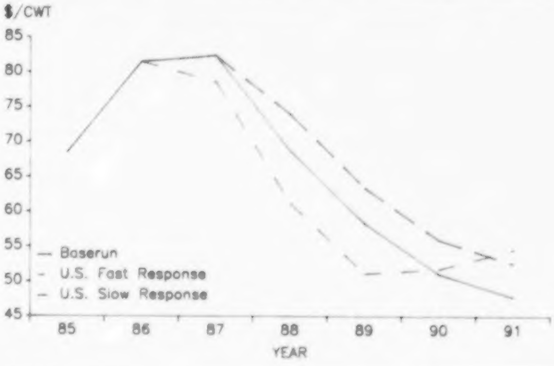
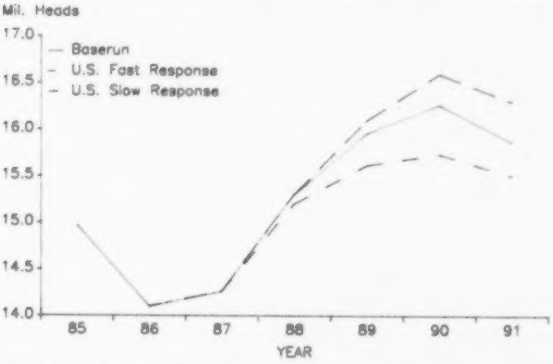


FIGURE 24. CANADIAN HOG MARKETINGS



FOOD MARKETS OUTLOOK

Brian Davey

INTRODUCTION

My task is to provide an overview of the outlook for food markets in 1987. In particular, I will be discussing the outlook for retail food prices, food and beverage processing and food retailing. A more detailed analysis of the situation in 1986 and the outlook for 1987 can be found in the papers on food prices and food processing and retailing in the December 1986 issue of Food Market Commentary.

My overview is in two parts: First, I will discuss the assumptions on which the outlook is based. Second, I will present the outlook itself.

ASSUMPTIONS UNDERLYING THE 1987 OUTLOOK

The 1987 food markets outlook is based on forecasts of various macroeconomic factors and projections of farm commodity supplies and prices. Following the now normal practice for all Agriculture Canada's market outlook work, the macroeconomic forecasts are taken from the latest, in this case the October 1986, forecast by the Conference Board of Canada. The commodity projections are, of course, those presented by Bruce Huff.

On the macroeconomic side, we have used the following assumptions to develop our food outlook. First, it is expected that the Canadian dollar will continue to trade at around its current level of 72¢ U.S. in 1987. This means that changes in the Canada-U.S. *exchange rate* will not be a significant factor affecting next year's food outlook.

Second, so far as *interest rates* are concerned, the outlook for 1987 is for an average prime rate of 9.8%, essentially unchanged from that prevailing in the second half of 1986. As in the case of exchange rates, the expected stability in the prime rate means that interest rates will not be a significant factor in food price movements in 1987.

Third, crude oil prices are forecast to increase by 13% next year compared to the very low levels of the current quarter. However, on a year-over-year basis they are expected to drop by nearly 14% in 1987. Natural gas prices are expected to decline by 12%, due mainly to the deregulation of the natural gas industry on November 1, 1986. Conversely, electricity prices are forecast by the Conference Board to increase 6% in 1987. On balance, therefore, and on an annual basis *energy costs*, which account for about 5% of the cost of processing, distributing and retailing food in Canada, are expected to fall slightly in 1987.

Fourth, only moderate price increases are expected next year for the *packaging materials* used by the food and beverage industries. While some increase is expected in the price of paper packaging products, prices of materials such as plastics, which are dependent on petroleum costs, may fall somewhat.

Fifth, *transportation costs*, which account for about 5% of food marketing costs, must be considered. In 1987, costs to both truckers and the railroads will likely increase in line with inflation, expected by the Conference Board to be practically unchanged from 1986 at about 4%. Lower oil prices will be countered by increases in insurance premiums for trucking firms and by increases in wage rates.

Sixth, increases in *labour costs* in the food industry are not expected to average much more than 4% in 1987. Average hourly earnings in the private non-farm sector are forecast to rise 4.1% next year in nominal terms. Given recent contract settlements, wage rates in the food PDR sectors will show similar increases. Wage increases are an important consideration in the food outlook because labour costs are the single most important cost factor, accounting for about 55% of food marketing costs. With PDR costs representing 60% of the retail price on average, a 1% increase in labour costs translates to an increase of 0.33% in retail food prices, assuming the labour cost increase is passed on in full.

All of the factors I have discussed so far impact on the supply or cost side of the food marketing chain. It remains to consider the demand side of the equation, that is, what is happening to *consumer incomes and expenditures*. Growth in real gross domestic product is forecast by the

Conference Board to be only 2% next year, down from 3.2% in 1986. Real personal disposable income is forecast to grow by 1.8% in 1987, compared to 1% in 1986, but consumer expenditures on goods and services will increase by 2.5%, in real terms, due to a continuing decrease in the savings rate. Real consumer expenditure growth in 1987 is down from 3.5% in 1986. Food purchased from restaurants may be the main beneficiary of the increase in consumer expenditures next year, while spending on food from stores will increase by less. Overall, however, the level of income growth forecast by the Conference Board is not expected to exert any significant upward pressure on food demand and prices.

Finally, and very briefly, in regard to *commodity prices*, cattle prices will be up in 1987 due to reduced supplies, but the prices of other animal products are expected to remain close to 1986 levels on an annual basis, or even decrease slightly as in the case of poultry and eggs. With smaller crops this year, apple, potato and storable vegetable prices will be higher in 1987 than in 1986 of the crop year. A moderate strengthening of raw sugar prices is expected. Edible oil prices are likely to hold steady for the balance of the current crop year.

In summary, therefore, the outlook for food in 1987 is based on a continuation of moderate increases in most food marketing costs, including labour, and for relative stability in interest and exchange rates. Growth in consumer expenditures on goods and services is also expected by the Conference Board to remain near its 1986 rate. If there is stronger growth and less inflation, the impacts would tend to offset one another so far as the outlook for food markets is concerned. Stronger growth in GDP means more upward pressure from the demand side, while lower inflation reduces the pressure on the cost side.

1987 OUTLOOK

Given these assumptions, I will now present in turn the outlook for food processing, beverage processing, food retailing and retail food prices in 1987.

For *food processors*, the indications are that 1987 will likely bring generally positive results. The outlook is for continued growth in sales, albeit at a slower rate than that experienced in 1986. On the inputs side, overall cost pressures are expected to remain moderate with no major increases anticipated. Financial results, as a consequence, should be quite positive. This stable, but favourable, picture for food processors is complemented by their investment intentions – reflecting the expected relatively good short-term results, food processors have indicated that they plan to increase capital spending by about 11% in 1986.

Beverage processors have been experiencing substantial increases in output and shipments, due in part to aggressive marketing campaigns involving the introduction of new products and heavy promotion expenditures. This ship-ments growth is beginning to be reflected in operating income, especially for the soft drinks and brewing industries. For 1987, further growth in shipments is expected, leading to a continued improvement in operating results.

So far as the outlook for *food retailing* is concerned, sales will continue to increase in 1987, but at a slower pace as the rate of growth in consumer expenditures slows down and as spending on meals eaten away from home increases more rapidly than spending on food purchased from stores. The profitability of food retailing, which has declined in recent years, is not expected to improve in the short run, even though cost pressures are expected to be moderate in 1987.

The high degree of competitive pressure evident in the food retailing industry in recent years will likely continue through 1987, especially non-price competition such as the introduction of more non-food items and specialty departments into retail food stores, the proliferation of new store formats and changes in opening hours. In these circumstances, improvements to the financial results of food retailers will depend to a large extent on the control of operating expenses, in particular the non-merchandise expenditures like labour, energy, rent, packaging materials and interest.

Finally, *retail food prices* are expected to increase by 3-5% next year compared to about 5% in 1986. A similar range, 3-5%, is forecast for both food purchased from stores and food purchased from restaurants. A major reason for the relatively sharp increase in food prices in 1986 was larger than expected price increases for pork, cereal and bakery products and coffee, and smaller than usual seasonal decreases in fruit and vegetable prices. These factors have contributed to an acceleration of food price inflation in the second half of 1986. This will carry over into 1987 when we expect that the rate of food price increase on a year-over-year basis will be above average in the first half and below average in the second half of the year.

So far as the major food groups are concerned, small decreases are expected on a year-over-year basis in retail prices for chicken, turkey, eggs and fats and oils. Increases of up to 5% are forecast for fresh pork, dairy products, bakery and other cereal products, coffee and tea and processed fruits and vegetables, although processed vegetable prices could be a little higher. Somewhat larger increases are expected for beef, cured meat, sugar and some fresh vegetables. It should be noted, however, that these annual forecasts may mask substantial swings in price changes within the year, especially for red meats.

In 1988, we are expecting the rate of increase in retail food prices to be somewhat lower than in 1987. This is due, at least in part, to a continuation of moderate increases in food marketing costs, roughly in line with general inflation. Sharply lower prices are expected for pork and cured meats. Prices of beverages and fats and oils may also decline in 1988, while only moderate increases are in prospect for most other commodity groups.

AGRICULTURAL TRADE OUTLOOK

D. McClatchy

This paper focuses on Canada's agricultural trade outlook in four different time frames:

a) The "very short term", - calendar 1986
b) The "short term", - 1987
c) The "medium term", - the next 5 years, with emphasis on the likely pattern by 1991
d) The "long term", - beyond 1991.

Quantitative forecasts of broad trade aggregates are provided for the first three of these periods. These forecasts are summarized in Figures 1, 2 and 3, with two historical points of reference for comparisons - the years 1984 and 1985. Figures 4 and 5 provide a better basis for understanding the relative net contributions of each of the main commodity sectors to agricultural trade, using the same data and time frames. A theme of the paper is the importance, particularly with respect to the long term trade outlook, of potential farm and food policy changes in other countries - either unilateral changes or changes which might result from bilateral or multilateral trade negotiations.

THE OUTLOOK FOR CALENDAR 1986

1986 year-end statistics will not be available for another 3 months or so. This section attempts to predict what these numbers will look like. Reasonably firm figures are available up to the end of September. Thus our "informed guesstimates" apply only for the last three months of the year and our confidence in this prediction is correspondingly higher than it is for the longer-term forecasts.

It appears now that Canada is heading for an agricultural trade surplus for 1986 of $2.3 to 2.4 billion; i.e. about $0.5 billion less than in 1985 and nearly $2 billion lower than in the 1982-84 period. It should also be recalled, however, that the years of the early 1980s were atypical given that the agricultural trade surplus never exceeded $1.4 billion during the decade of the 1970s.

Whereas in 1985 the reduced trade surplus was largely due to reduced exports, the further reduction this year is broadly attributable to an increase in agricultural imports from $6 billion in 1985 to an estimated $6.6 billion in 1986. The imports value increase largely reflects higher prices for coffee, sugar, beef, and some fruit and vegetable items, together with increased volumes for some fruits. Partly offsetting this general trend towards increased imports have been substantial reductions in corn and soybean imports reflecting improved Canadian crops of these commodities over the last two seasons and somewhat lower livestock feed demand in this country.

In aggregate, and despite some significant price declines in the grains and oilseeds areas, the value of agricultural exports is now expected to be up from 1985 by about $0.1 billion. This is mainly because of higher grain volumes being available for export this year, together with price increases for red meat exports. Soybean exports are also up significantly this year.

1987 TRADE OUTLOOK

The objective, in this section and the next (which focuses on a 5-year horizon), is to translate forecasted future macroeconomic and commodity production, consumption and price trends into their implications for trade volumes and values. The underlying macroeconomic and sectoral expectations have already been summarized in some previous papers today, and the latter will be presented in more detail in the individual commodity outlook sessions tomorrow. By way of caution, recall that these underlying forecasts depend on certain assumptions about the continuation of current policies in other countries (in particular the U.S.), about future weather patterns being "normal", and about the absence of shocks to the international economic environment. These are all uncertain elements, changes in which can have major trade repercussions.

To briefly recapitulate, key trade-related commodity market features foreseen for 1987 are a further deterioration in international grain and vegetable oil prices, further improvement in beef/cattle and pork/hogs prices, and contraction in North American red meat production with the exception of pork in Canada.

While grain supplies are up, and consequently 1987 export volumes are expected to be up, the value of calendar year grain exports will likely be 6% lower next year. The value of oilseeds exports could be down 10% or more. Live animal and red meats exports, on the other hand, may well be up by 7 to 8%, reflecting higher prices as well as a substantial rise in the volume of pork exports. These key expectations, plus some others which have less impact on the overall result, lead us to forecast that agricultural exports will be approximately $8.9 billion in 1987 – down by less than 2% from the expected 1986 level.

On the imports side, volumes are in general expected to be similar to or slightly higher than those in 1986, with a few exceptions like corn and soybeans, which should both be lower on account of higher Canadian supplies and the recent countervail action in the case of corn. With moderate, inflation-associated price rises anticipated for many items, agricultural imports in 1987 are forecast to rise by 2.3% to approximately $6.8 billion.

These forecasts for exports and imports respectively imply a further decline of about $0.3 billion in the size of Canada's agricultural trade surplus to approximately $2.1 billion in 1987.

THE MEDIUM TERM OUTLOOK – 1991

By 1991, some recovery in the levels of international grain prices is expected to have begun. Wheat prices may still be below current levels, but feedgrains and oilseed prices are expected to have rebounded to current levels or better. Consequently, and with growing production and export volumes anticipated, grains and oilseeds export receipts are likely to be $1 billion higher in 1991 than in 1987.

On the other hand, considerable cyclical expansion of North American breeding herds and red meat production, largely in response to todays' higher production margins, will have occurred by 1991, with the result that red meat prices, in particular of pork, will have dropped. Thus we are forecasting that the value of live animal and red meat exports could be $0.4 billion lower in 1991 than in 1987.

Moderate growth in most other export items is anticipated, except in the case of dairy product exports which are likely to gradually fall as domestic production is even more closely matched to domestic butterfat requirements and a growing consumer preference for fat-reduced milk reduces the non-fat-solids surplus which is associated with butterfat self-sufficiency.

On the imports side, we anticipate gradual expansion, in current dollar value terms, in all major categories over the next 5 years. Given current expectations about future Canadian consumer income growth, about general recovery across a broad spectrum of world agricultural commodity prices, and about inflation and exchange rates, it appears reasonable to expect that Canada's agricultural import bill in 1991 could be nearly $1 billion higher than in 1987.

Since we foresee agricultural exports in aggregate growing by approximately the same amount, this leads us to the conclusion that the trade surplus in 5 years' time will be very similar to that expected for next year, i.e. in the range of $2 billion. This does not mean that we see this agricultural trade surplus remaining steady for the next 5 years. In the intervening years lower grain and oilseed export prices are likely to dominate other factors and imply lower trade surpluses. However, we do expect that, by 1991, world market grains and oilseeds price recovery will have resulted in this surplus having rebounded to about the 1987 level, at least in nominal (current dollar) terms.

One trend probably worth noting in the medium term outlook is that, among those agricultural sub-sectors which are in a net export position, there is some evidence for an increasing dominance by the big three – grains, oilseeds and hogs/pork (Figure 2). The importance of dairy, and cattle/beef is projected to diminish.

Among the net-importing categories the dominance of fruits and nuts is expected to grow.

THE LONG-TERM TRADE OUTLOOK – BEYOND 1991

No paper purporting to deal with the agricultural trade outlook these days could be complete without reference to international trade negotiations. Such mention has been left until this point in the belief that, while both bilateral and multilateral negotiations are currently hot topics, any policy changes agreed to in these discussions will inevitably be phased in gradually and that their main impact will be felt in the longer term.

The long term trade picture could be very different depending on how these negotiations evolve. The new Uruguay Round of GATT negotiations has the potential for being the most significant for agriculture yet. There is now a fairly widespread recognition that agricultural *trade* measures exist largely as necessary counterparts to *domestic* producer price and income support policies, and that talk about more effective international discipline being applied to such things as export subsidies, import quotas and variable levies involves at least implicit talk about restrictions on the underlying domestic support programs. Tariffs are relatively unimportant in agricultural trade today. The days of focussing principally on tariffs in agricultural trade negotiations are over. Significant changes in agricultural support policies in many countries may be not very far down the road.

Nor are major agricultural policy and program changes of a *unilateral* nature to be ruled out. Notable examples to have already occurred in recent years have been those in China, in New Zealand and in the U.S. At a time when concern about the fiscal costs of farm policies is widespread, awareness and concern about the additional consumer costs of these same policies is rapidly growing. There is also increasing awareness and concern about the disparate way they distribute income benefits among farmers within countries, and about the fact that a large share of program benefits are 'lost', via lower trading prices, to the consumers of food importing countries like the USSR and rather than being redistributed to producers within exporting countries. Prime Ministers, Finance Ministers and Trade Ministers are these days talking about agricultural policy almost as much as Ministers of Agriculture.

What is the rationale behind this international impetus for agricultural support policy reform? In recent years, several quite comprehensive studies have been undertaken on the effects of agricultural protection. These have provided illustrations of the extent to which recent policies have resulted in an inefficient allocation of the world's agricultural resources and distorted world prices and trade flows. They have also drawn attention to the interlinkages which occur in world markets, including the ways individual countries are affected by other countries' policies and the extent to which the price for one commodity (like feedgrains) is affected by support measures for other commodities (like livestock and sugar) as well as its own. It is increasingly realized that if many major producing countries were to simultaneously reduce the levels of their farm price support (or at least the supply-inducing features of it), world supplies would be reduced and world prices would rise to compensate producers, in very large part, for such loss of direct, government support. In many less protectionist countries producers would be better off, because of world price rises. In general, consumers would be better off in the countries with higher levels of current protection, because of domestic price falls. Fiscal costs would be reduced in virtually all countries. The studies also indicate that commodity price relativities would also tend to change considerably if support was reduced or eliminated across all commodities with world dairy product prices showing the most increase, followed by beef prices, and with grains and oilseeds prices being the least responsive to such broadly-based policy changes.

By way of illustration, let me cite one of the most recent analyses to be reported. Two Australians, Anderson and Tyers, this year estimated that agricultural protection in Western Europe and East Asia in 1985 cost Canadian producers US $850 million, or US $3,600 per farm, or 20% of net farm income. These effects arise mainly because those regions' agricultural policies alone are calculated to have depressed world market prices by the following amounts: wheat 2%, coarse grains 4%, beef and lamb 14%, and pork and poultry 3%. The estimated world trade volume impacts of Western European and East Asian agricultural protection are dramatic and radically different between commodities, ranging from a 63% depression of beef and lamb trade volume to a negligible impact in the case of wheat. The latter conclusion does not mean that wheat trade patterns would not change if European and Asian protection was reduced – just that increases in exports from some countries (Australia and North America would increase theirs by an estimated 1.3 million tonnes), for example, would just match decreases in the exports of others.

Whether unilateral or multilateral in nature, changes in farm and food commodity policies and programs tend to have trade impacts which are relatively greater than their domestic production and consumption effects. Take the case of China, for example. In 1984 China was the world's largest wheat producer with 88 million tonnes.

She also imported 12 million tonnes in that year (3 million tonnes from Canada). Thus a situation exists where a 15% increase in production by one country could potentially reduce the country's imports by 100%, and reduce world trade in wheat by 12% or more ("potentially", because it is recognized that currently in China domestic wheat production and imports are not totally substitutable one for the other). This is not a particularly hypothetical scenario. In the 4 years preceding 1985, Chinese wheat production rose by 30 million tonnes or more than 50%, in large measure in response to improved price incentives to producers (CIMMYT (1985), Tu Nan (1985)). Wheat production in all developing countries rose by 80 million tonnes between 1974 and 1984. Yet third world wheat demand growth still outpaced these production increases, with the result that wheat imports by developing countries almost doubled during the decade of the '70s and now account for more than 50% of total world wheat imports (CIMMYT, op. cit.).

The foregoing statistics illustrate how rapidly the fundamental elements of the world market, for one product of supreme significance to Canada, are changing. To a very large extent the changes observed have been induced by policy changes. More policy reform is likely to occur in the coming decade. The USSR, for example, has just announced the first rise in its consumer bread price for approximately 30 years, and is reportedly contemplating offering improved price incentives to its producers, perhaps somewhat along the lines of the Chinese model. For another example, Argentina would like to link its economy with that of Brazil and export more wheat to that country. Such eventualities all have a potential for decreasing the world demand for Canadian wheat exports.

Many developing countries still have agri-food prices which effectively tax production and/or subsidize consumption. World Bank, (ch. 4). The World Bank and other development agencies have for some time been exhorting these countries to reform such policies. Some such reform has already occurred, and has had a lot to do with the third world production advances already observed.

While such reforms may not be in Canadian farmers' immediate interest, because in these cases, the existing policies help to support world market prices, they may be in Canada's longer term interests. Such reforms are advocated because existing policies are seen as inhibiting economic development. With economic development come higher incomes and, in turn and in many countries some substitution wheat-based foods for other principal sources of carbohydrate and increasing meat consumption. This latter, of course, has important implications for feed grain demand and trade.

In summary, the long term outlook for Canada's agricultural trade is seen as crucially dependent on the collective outcome of a variety of different policy decisions which will be taken by other countries in the course of the next few years. Some of these will be taken in the context of trade negotiations, which may also necessitate some revisions to existing Canadian measures. Others will be taken unilaterally in response to domestic fiscal and consumer pressures, or for external account (foreign exchange) reasons. Still others may be taken in response to the pressure exerted by international lending institutions on borrowing countries. Some examples were chosen to illustrate how important some of these foreign policy changes could be for Canada's agricultural trade in the longer term.

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FIGURE 1 CANADIAN AGRICULTURAL EXPORTS AND IMPORTS, BY MAJOR COMMODITY GROUPINGS, AND AGRICULTURAL TRADE SURPLUS; ACTUAL (1984, 1985) AND PROJECTED (1986, 1987, 1991)

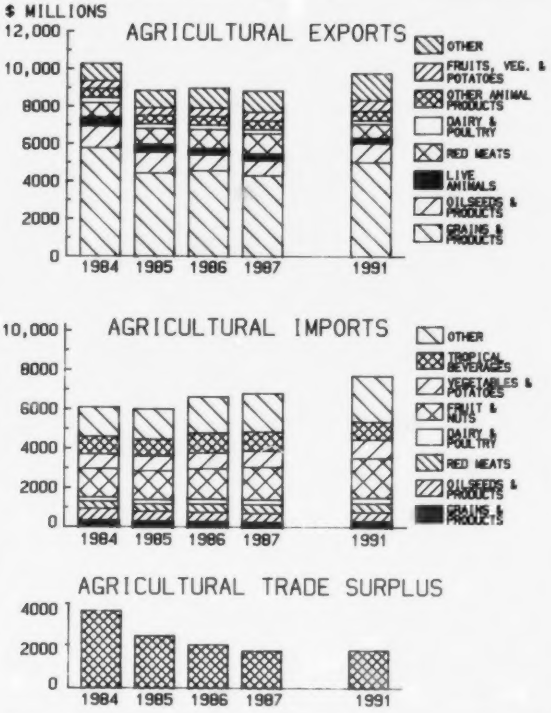
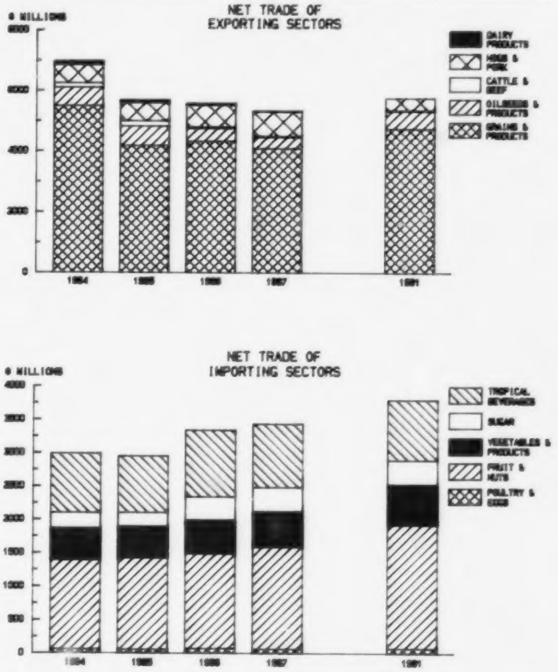


FIGURE 2 CANADIAN NET AGRICULTURAL TRADE (EXPORTS MINUS IMPORTS) BY MAJOR COMMODITY SECTORS; ACTUAL (1984, 1985) AND PROJECTED (1986, 1987, 1991)



FARM INCOME OUTLOOK

B.B. Perkins

INTRODUCTION1

This paper provides an overview of the farm income outlook for 1986 and 1987 at the national level along with some comments on the medium-term income prospects and implications for Canadian agriculture. A second farm income presentation dealing with the provincial level outlook is scheduled for the concurrent session on Farm Costs and Income, tomorrow morning.

Forecasting Canadian farm income is a formidable undertaking given the diverse nature of this country's agricultural industry and our well deserved reputation for adverse weather conditions. The task has become even more difficult over the years with farm incomes increasingly influenced by conditions in the general economy, unstable international commodity markets and government agricultural policies both at home and abroad.

Perhaps I can instill some measure of confidence in the forecasts by pointing to the track record: the farm income forecasts made at this conference in each of the last five years have correctly indicated the direction of change for both the current and following year, with an average margin of error of about 7%. This level of accuracy is all the more credible if one considers that forecast errors in farm operating expenses or farm cash receipts are magnified four or fivefold when deriving the residual farm net income figure.

A good deal of the credit for this achievement belongs to the efforts of Statistics Canada and of the Provincial Ministeries of Agriculture which work closely with Agriculture Canada in the preparation of the farm income forecasts. I would like to take this opportunity to acknowledge the invaluable assistance of all the individuals involved in preparing this presentation.

FARM INCOME ACCOUNTS: BASIC CONCEPTS

Realized net income is the difference between cash receipts and total operating and depreciation expenses; it also includes "income-in-kind" which is a measure of the value of farm produce consumed in the home. Realized net income is used for debt repayment, reinvestment in the farm, family consumption and savings. Total net income measures the income accruing to farmers after adjustment for changes in the value of farmer-owned inventory. Total net income is derived by adding the value of inventory changes to realized net income.

1986 FARM INCOME SITUATION

Following a sharp decline in 1985, realized net income has rebounded in 1986 above the previous record high of $4.33 billion established in 1984. Realized net income for 1986 is estimated at $4.6 billion, 19.6% above the revised estimate of $3.9 billion for 1985. This increase is the result of a forecast increase in cash receipts of just over 1%, combined with a decline of almost 3% in expenses. With the large grain harvest this year the value of on-farm inventories is also up – resulting in a record total net income level of $5.5 billion.

The apparent paradox of record high farm income in a year marked by increasing financial difficulties for many farmers, emphasizes the problems of industry level forecasts in an industry as diverse as Canadian agriculture. These income aggregates mask the important differences among commodity sectors, the offsetting effects of falling market receipts and rising program payments, and the circumstances of individual producers, (e.g. weather-related crop losses and debt repayment problems) (Table 1).

FARM CASH RECEIPTS

Total farm cash receipts, including direct program payments, are expected to increase from $19.9 billion in 1985 to $20.2 billion in 1986. Higher livestock receipts are offset by lower crop receipts.

Grain and oilseed producers have been faced with a difficult situation in 1986, with only barley receipts showing any improvement over already low 1985 levels. Market receipts for grains and oilseeds fell by over $600 million from market receipts of 1985. Partially offsetting this market decline were 1985 drought relief payments paid in 1986, and a substantial increase in Western Grain Stabilization payments. Also on the positive side, tobacco receipts were up sharply in 1986 because delays in reaching an agreement on the price of the 1985 crop resulted in most of last year's crop being marketed in 1986. Of the other major crops, vegetables, floriculture and nursery receipts increased 6%, while fruit receipts declined 8%. As a result, total crop receipts are estimated to fall about 3% from 1985 to $9.1 billion.

Receipts from the sale of livestock and livestock products are estimated to increase by 3% in 1986 for a record high of $10.1 billion. Estimated cattle and calf receipts are the same in 1986 as in 1985, despite price increases, because marketings were limited by drought related herd liquidations in 1984 and 1985. It is the hog sector that has demonstrated the most improvement with significantly higher prices raising receipts by over $270 million or almost 15%. Higher formula prices for industrial milk and cream contributed to a small increase in dairy receipts while poultry receipts increased by over 4% because of increased marketings of both chickens and turkeys. By contrast, egg receipts declined by 3% despite increased marketings as lower feed prices have reduced egg prices.

FARM EXPENSES

Total farm operating expenses and depreciation charges in 1986 are reckoned to have declined for the first time since 1957. The forecast decline to $15.8 billion amounts to almost $500 million from the 1985 level. Over $150 million of this decline is attributable to increased government support through direct federal and provincial input rebate programs. Commercial feed expenses decreased by over $200 million due mainly to lower feed grain prices. Lower fuel prices combined with certain tax exemptions and rebates reduced total fuel expenditures by over $230 million or 15% below 1985 levels. Fertilizer costs have been lowered by reduced application and small price declines. Land rent costs also declined in response to lower grain prices and further declines in farmland values. Depreciation charges changed little, reflecting continued slow growth in investment in agriculture. Interest costs, which have shown a marked decline in recent years were fairly stable in 1986, despite an estimated decline of 2% in total farm debt, because of relatively high interest rates for the first half of the year.

MAJOR INFLUENCES ON FARM INCOME

Many of the major influences on farm income are not readily apparent when observing year-over-year changes in farm cash receipts and expenses.

One of the more positive factors affecting Canadian farm incomes in recent years has been the Canada/U.S. exchange rate. Most agricultural products are priced on the world market in U.S. dollars. With the exception of some supply-managed and local market commodities, Canadian prices reflect these prices adjusted for the value of the Canadian dollar. Since 1981, the value of the Canadian dollar relative to the U.S. dollar has declined 16%. This implies that market receipts are roughly 16% higher than they would have been if the Canadian dollar had not fallen in value. For the major grains and livestock sectors, this difference would amount to about $1.5 billion in cash receipts.

Declining interest rates have also had a significant positive effect on farm incomes. The Canadian prime rate has dropped 8.8 percentage points or 46% from the 1981 peak. The impact of falling commercial interest rates is immediate on the 60% of farm debt borrowed at floating rates. Moreover, for many farmers interest rates were further reduced by government credit programs. At current levels of farm debt, farm interest costs are about $1 billion less than they would have been if interest rates for the industry had not declined from their peak in 1981.

A third major influence on farm incomes has been the rapid increase in direct program payments to producers to offset market shortfalls, natural disasters and rising production costs. Programs which are partially funded through producer levies and premiums (e.g. Western Grain Stabilization, Crop Insurance and Provincial Income Stabilization schemes), have generated the largest payouts in recent years. Ad hoc supplementary payments such as the prairie drought assistance in 1984 and 1985, and input rebates on such items as feed, fuel, interest and property taxes have also increased significantly. Total direct program payments to producers increased from $1 billion in 1981 to an estimated $2.8 billion in 1986. These payments currently account for 14% of total farm cash receipts.

Offsetting these positive influences has been a sharp decline in grain and oilseed prices. For the 1986-87 crop year, grain and oilseed prices are about 31% below the 1981 level with receipts falling accordingly. Market receipts for grains and oilseeds in 1986 are forecast at more than $1.6 billion lower than in 1981.

These are some of the major influences to keep in mind when examining the farm income prospects for 1987 and beyond.

1987 FARM INCOME OUTLOOK

Realized net income for 1987 is estimated at $3.8 billion, based on the farm commodity, farm input and general economic outlook presented at this Conference. Of course, abnormal weather conditions or the introduction of new government assistance programs could significantly alter the actual outcome. A major influence on this income outlook is lower grain prices, which affected crop receipts only in the latter half of 1986, but which will impact on all grain marketings in 1987. Also, the significant drop in operating expenses observed in 1986 is not likely to be repeated again next year (Table 2).

FARM CASH RECEIPTS

Market receipts from grains and oilseeds are expected to decline by around 15% in 1987, the result of continued low prices and sharp reductions in Canadian Wheat Board final payments for the 1985-86 crop. The significantly lower proceeds for the 1986-87 grain crop will trigger increased Western Grain Stabilization payments in 1987 which will help offset the lower market receipts. Total program payments to producers, however, are not likely to exceed last year's level as the large drought assistance payments in 1986 will not be repeated under normal conditions. Receipts for potatoes and other special crops are expected to rise slightly through higher marketings and stable prices. Stronger prices and higher marketings should increase both fruit and vegetable receipts. Continued growth in sales of greenhouse and nursery products is forecast to increase receipts again in 1987. Tobacco receipts, however, are expected to decline as normal marketing patterns resume and weak demand influences prices and production. Total crop receipts for 1987, then, are forecast to decrease by almost 9% to $8.3 billion, the lowest level since 1980.

The outlook for the livestock sector is more favourable, with receipts from livestock and livestock products forecast to increase by 4% over 1986 to $10.5 billion. Cattle and calf receipts should increase by about 4% as higher prices offset slightly lower marketings. Hog prices should continue to rise while both the hog and poultry sectors are expected to benefit from higher marketings, raising receipts in both cases by over 5%. Dairy receipts will increase slightly due to little change in consumption and a small increase in net target returns. Egg receipts are expected to fall by about 4% as prices decrease in line with lower feed prices.

FARM EXPENSES

Farm operating expenses and depreciation charges are not expected to change significantly from the estimated 1986 level. Several input price declines, and some reduction in utilization of farm inputs related to grains, are forecast to increase total expenditures by less than 1% to $15.9 billion.

Land rent expenses should continue to decline with grain prices. Expenditures on pesticides and fertilizer are expected to drop as weak demand holds prices at or below this year's levels and average application rates are reduced. Lower average interest rates and a forecast decrease in total farm debt will combine to decrease interest charges in 1987. Feed expenses are also expected to decline despite higher livestock numbers because of the lower feed grain prices. Machinery repairs are forecast to rise as farmers continue to maintain older equipment and postpone investment in replacements. Depreciation charges are expected to remain at 1986 levels given little change in farm building and machinery prices and only marginal additions to capital stock.

MEDIUM-TERM INCOME PROSPECTS

For Canadian agriculture, the period ahead to the 1990s is likely to be characterized by instability and uncertainty, few growth opportunities and considerable adjustment and change. Excess production capacity world wide, limited demand growth, and increased competition among exporters will destabilize both traditional and emerging markets. Continued high levels of government support for the industry will be required to offset revenue declines forecast over the next two to three years.

The outlook for the general economy is quite good with forecast low rates of inflation, gradually falling interest rates and a stable Canadian dolar for the remainder of the decade. The timing and strength of an economic recovery in Canadian agriculture depends mainly on an enduring recovery in international commodity markets.

Income prospects appear favourable in the red meat sector with the supply-managed commodities maintaining current income margins, especially for dairy and poultry and, to a lesser extent, eggs. Contributing to this positive outlook is the expectation of farm operating expenses rising well below the rate of inflation; this is due to small input price increases, little growth in production levels and increased production efficiencies through technological innovation.

The situation is much different in the grains and oilseeds sector. The fundamental problem facing this sector is rooted in international markets. World-wide surplus stocks and excess production capacity will continue to exert downward pressure on farm prices. Without a major world crop shortfall or policy changes in exporting countries, world grain prices will remain low. Toward the end of the decade, however, once the exporting countries (particularly the United States and EEC) reduce their stocks and strengthen international prices, prospects for grain and oilseed production should become more favourable.

FARM FINANCIAL IMPLICATIONS

The medium-term farm income outlook suggests a further deterioration in farm financial conditions is likely to occur. The situation, however, will vary significantly among regions and commodities. Farm financial difficulties will be concentrated in the grains sector and, therefore, will be most evident in western Canada.

The most widespread impact will be through further declines in farm asset values, primarily through farmland price declines. The downward pressure on farmland values will continue until farmland prices reach new equilibria with expected earnings. Farmland values are expected to decline a further 5-10% in 1987, following the estimated decline of about 20% since 1982. By the end of the decade, land values are expected to level off and begin to rise once some recovery in world grain prices occur. The peak levels of 1981 are not expected to be reached again for many years.

Changes in the value of farm assets affect the level of equity in the industry. Since 1982 an estimated $16 billion decrease in farm asset values, combined with increases in total farm debt, have resulted in an estimated drop of $19 billion or 17% in farm equity. The further declines expected in farm asset values point to continuing erosion of farm equity in the medium term. However, the magnitude of change should be less than that observed over the last five years.

Finally, I should stress that the aggregate farm financial outlook, as with the aggregate farm income outlook, conceals a diverse range of prospects within the farm sector. Adjustment to these financial prospects will vary accordingly. Farmers with low equity will seek to consolidate their financial positions in order to survive, through such measures as debt reduction, sale-leaseback arrangements and partial liquidations. Farmers in financially strong positions will take advantage of reduced farm asset values to expand their businesses, once land prices and farm returns appear to be in equilibrium. For the majority of farmers risk and cost reducing strategies will be the challenge of the period: a focus on sound financial management and accounting will bet required, with measures to limit debt, to build up equity, and to insure against risk through participation in crop insurance and stabilization programs.

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[1] The 1987 farm income forecast was released prior to announcement of the $1 billion Special Canadian Grains Program. This program will add $1 billion to 1987 farm cash receipts. The impact on 1987 farm expenses and, therefore, realized net income depends on what farmers do with this cash assistance. Purchases of additional inputs such as fertilizer and chemicals would increase expenses while repayment of debt would reduce interest expenses. Investment in machinery or buildings would increase depreciation charges. On balance, a marginal increase in total farm expenses can be expected because of the $1 billion program. Realized net income for 1987 is now likely to exceed the projected 1987 level of $4.64 billion rather than decline to $3.82 billion as forecast in this paper.

TABLE 1 1986 FARM INCOME SITUATION

	1985	1986	Change 1986/85
		- $ millions -	
Cash receipts	19 913	20 215	+1.52
Expenses and depreciation	16 274	15 825	−2.76
Realized net income	3 890	4 651	+19.56

TABLE 2 1987 FARM INCOME OUTLOOK

	1985	1986	Change 1986/85
		- $ millions -	
Cash receipts	20 215	19 399	−4.04
Expenses and depreciation	15 825	15 853	+0.18
Realized net income	4 651	3 817	−17.93

FARM INCOME HIGHLIGHTS

1986 SITUATION

Realized net farm income for 1986 is projected to increase 19.6 % to $4.65 billion from the revised estimate of $3.89 billion in 1985.

The expected increase in realized net farm income will not be shared equally among the provinces. The largest increases are projected for Ontario (41.4 %) and Alberta (29.7 %). The only province expected to register a decline in realized net farm income is Saskatchewan (– 9.0 %).

Total farm cash receipts are expected to increase from $19.9 billion in 1985 to $20.2 billion in 1986 with higher livestock receipts offsetting lower crop receipts.

Crop receipts are expected to decline 3.5 % to $9.1 billion with market receipts from grains and oilseeds projected to drop by 10 %. A substantial increase in direct program payments to grain producers helped offset low grain receipts.

Livestock receipts are expected to increase 3.3 % to $10.1 billion led by a 14.9 % increase in hog receipts. Marginal increases are expected in the cattle, dairy and poultry sectors.

Farm operating expenses and depreciation charges are projected to decline for the first time since 1957 to $15.8 billion – a decrease of 2.8 % from 1985. Lower fuel and feed expenses and increased assistance under government input rebate programs are the major factors.

Total net farm income, which takes into account the value of inventory change, is projected to increase 27.6 % to $5.5 billion due to a large build-up of on-farm grain inventories.

1987 OUTLOOK

Realized net farm income for 1987 is forecast at $3.82 billion; a decrease of 17.9 % from the 1986 level. This forecast incorporates established federal and provincial government program payments but does not take into account any additional government assistance to agriculture.

There is a wide variation in provincial income prospects. Realized net farm income is forecast to increase significantly in British Columbia and the Atlantic Provinces (10 to 45 %) with a more moderate increase in Quebec (4.5 %). Sharp decreases are forecast in the prairie provinces (27 to 64 %) with a smaller decline in realized net farm income forecast in Ontario (8.1 %).

Total farm cash receipts are forecast to decrease 4.0 % to $19.4 billion with falling crop receipts partially offset by marginal increases in livestock receipts.

Crop receipts for 1987 are forecast to decline 8.4 % to $8.3 billion, primarily the result of much lower market receipts from grains and oilseeds.

Livestock receipts are forecast to increase by 3.8 % over 1986 to $10.5 billion with cattle, hogs, dairy and poultry receipts all expected to rise moderately.

Farm operating expenses and depreciation charges forecast at $15.9 billion for 1987 are not expected to change noticeably from the 1986 level. Lower feed, fertilizer, interest and rent expenses are likely to be offset by higher wage, fuel and machinery costs.

TABLE 1A. FARM CASH RECEIPTS, 1985 TO 1987, CANADA

	1985	1986	1987
		$ 000	
Wheat[1]	3 074 853	2 817 292	
Oats[1]	55 099	48 232	
Barley[1]	677 997	775 427	
Crop Insurance, Advances, Deferments and WGSA[2]	1 549 273	1 597 890	
Rye	30 454	24 952	
Flaxseed	194 138	134 896	
Canola/Rapeseed	905 783	698 571	
Soybeans	229 846	227 457	
Corn	575 348	414 417	
Sugar Beets	12 261	17 321	
Potatoes	272 655	272 470	
Fruits	288 561	266 895	
Vegetables	549 351	573 259	
Tobacco	158 011	439 102	
Other Crops[3]	827 741	768 257	
Total Crops	9 401 371	9 076 438	8 317 821
Cattle & Calves	3 589 427	3 553 243	
Hogs	1 821 614	2 094 748	
Sheep & Lambs	29 716	32 274	
Dairy Products	2 716 404	2 779 480	
Poultry	901 393	941 133	
Eggs	508 527	493 864	
Other Livestock	184 845	183 436	
Total Livestock	9 751 926	10 078 178	10 457 970
Other Cash Receipts[4]	759 868	1 060 167	623 061
Total Cash Receipts	19 913 165	20 214 783	19 398 852

TABLE 1B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARMING OPERATIONS, 1985 TO 1987, CANADA

	1985	1986	1987
		$ 000	
Taxes[5]	279 952	290 460	
Gross Farm Rent	690 427	650 477	
Wages to Farm Labour	1 370 539	1 424 446	
Interest on Indebtedness[6]	1 837 790	1 827 830	
Total Machinery Expenses[7]	2 439 499	2 279 677	
Fertilizer & Lime[8]	1 406 122	1 332 967	
Other Crop Expenses[9]	1 186 142	1 175 288	
Feed[10]	2 054 475	1 840 643	
Other Livestock Expenses[11]	560 901	538 240	
Repairs to Buildings[5]	256 329	272 602	
Electricity and Telephone	373 224	383 136	
Miscellaneous[12]	1 194 660	1 188 992	
Total Operating Expenses	13 650 060	13 204 758	13 236 476
Depreciation on Buildings	450 946	423 889	403 076
Depreciation on Machinery	2 173 445	2 196 083	2 213 978
Total Op. Expenses & Dep. Charges	16 274 451	15 824 730	15 853 530
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	19 913 165	20 214 783	19 398 852
Plus Income-in-Kind	251 432	261 270	271 675
Realized Gross Income	20 164 597	20 476 053	19 670 527
Less Op. Expenses & Dep. Charges	16 274 451	15 824 730	15 853 530
Realized Net Income	3 890 146	4 651 323	3 816 997
Plus Value of Inventory Change	436 900	871 972	
Total Net Income	4 327 046	5 523 295	

See footnotes at end of tables.

TABLE 2A. FARM CASH RECEIPTS, 1985 TO 1987, NEWFOUNDLAND

	1985	1986	1987
		$ 000	
Wheat[1]	0	0	
Oats[1]	0	0	
Barley[1]	0	0	
Crop Insurance, Advances, Deferments and WGSA[2]	1	6	
Rye	0	0	
Flaxseed	0	0	
Canola/Rapeseed	0	0	
Soybeans	0	0	
Corn	0	0	
Sugar Beets	0	0	
Potatoes	830	730	
Fruits	611	522	
Vegetables	1 931	1 963	
Tobacco	0	0	
Other Crops[3]	2 221	2 342	
Total Crops	5 594	5 563	5 935
Cattle & Calves	1 443	1 312	
Hogs	4 178	4 587	
Sheep & Lambs	64	64	
Dairy Products	9 449	10 296	
Poultry	11 842	13 589	
Eggs	9 050	8 714	
Other Livestock	838	910	
Total Livestock	36 864	39 472	40 682
Other Cash Receipts	688	435	139
Total Cash Receipts	43 146	45 470	46 756

TABLE 2B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARMING OPERATIONS, 1985 TO 1987, NEWFOUNDLAND

	1985	1986	1987
		$ 000	
Taxes[5]	37	38	
Gross Farm Rent	132	132	
Wages to Farm Labour	4 805	5 098	
Interest on Indebtedness[6]	1 586	1 775	
Total Machinery Expenses[7]	2 555	2 504	
Fertilizer & Lime[8]	1 141	1 146	
Other Crop Expenses[9]	859	875	
Feed[10]	15 981	17 004	
Other Livestock Expenses[11]	896	983	
Repairs to Buildings[5]	431	453	
Electricity and Telephone	1 045	1 063	
Miscellaneous[12]	1 981	1 995	
Total Operating Expenses	31 449	33 066	33 207
Depreciation on Buildings	640	601	577
Depreciation on Machinery	1 283	1 295	1 314
Total Op. Expenses & Dep. Charges	33 372	34 962	35 098
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	43 146	45 470	46 756
Plus Income-in-Kind	600	598	613
Realized Gross Income	43 746	46 068	47 369
Less Op. Expenses & Dep. Charges	33 372	34 962	35 098
Realized Net Income	10 374	11 106	12 271
Plus Value of Inventory Change	−7	313	
Total Net Income	10 367	11 419	

See footnotes at end of tables.

TABLE 3A. FARM CASH RECEIPTS, 1985 TO 1987, PRINCE EDWARD ISLAND

	1985	1986	1987
		$ 000	
Wheat[1]	481	455	
Oats[1]	536	477	
Barley[1]	2 883	2 814	
Crop Insurance, Advances, Deferments and WGSA[2]	3 657	2 527	
Rye	0	0	
Flaxseed	0	0	
Canola/Rapeseed	0	0	
Soybeans	0	0	
Corn	0	0	
Sugar Beets	0	0	
Potatoes	54 116	56 525	
Fruits	1 290	1 271	
Vegetables	5 317	5 450	
Tobacco	11 116	10 427	
Other Crops[3]	7 342	96	
Total Crops	86 738	80 042	96 084
Cattle & Calves	25 329	29 599	
Hogs	20 927	24 467	
Sheep & Lambs	298	368	
Dairy Products	27 919	28 557	
Poultry	991	1 806	
Eggs	2 939	2 843	
Other Livestock	2 764	2 939	
Total Livestock	81 167	90 579	98 088
Other Cash Receipts[4]	8 473	10 284	6 265
Total Cash Receipts	176 378	180 905	200 437

TABLE 3B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARMING OPERATIONS, 1985 TO 1987, PRINCE EDWARD ISLAND

	1985	1986	1987
		$ 000	
Taxes[5]	1 516	1 577	
Gross Farm Rent	3 324	3 164	
Wages to Farm Labour	17 175	17 140	
Interest on Indebtedness[6]	13 572	13 424	
Total Machinery Expenses[7]	22 971	22 708	
Fertilizer & Lime[8]	16 244	16 167	
Other Crop Expenses[9]	11 619	11 514	
Feed[10]	18 180	17 071	
Other Livestock Expenses[11]	5 592	5 956	
Repairs to Buildings[5]	2 420	2 541	
Electricity and Telephone	4 178	3 807	
Miscellaneous[12]	9 292	9 223	
Total Operating Expenses	126 083	124 292	125 302
Depreciation on Buildings	2 907	2 733	2 624
Depreciation on Machinery	15 426	15 698	15 933
Total Op. Expenses & Dep. Charges	144 416	142 723	143 859
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	176 378	180 905	200 437
Plus Income-in-Kind	2 673	2 604	2 584
Realized Gross Income	179 051	183 509	203 021
Less Op. Expenses & Dep. Charges	144 416	142 723	143 859
Realized Net Income	34 635	40 786	59 162
Plus Value of Inventory Change	−3 177	−6 906	
Total Net Income	31 458	33 880	

See footnotes at end of tables.

TABLE 4A. FARM CASH RECEIPTS, 1985 TO 1987, NOVA SCOTIA

	1985	1986	1987
		$ 000	
Wheat[1]	713	636	
Oats[1]	239	208	
Barley[1]	188	194	
Crop Insurance, Advances, Deferments and WGSA[2]	381	843	
Rye	0	0	
Flaxseed	0	0	
Canola/Rapeseed	0	0	
Soybeans	0	0	
Corn	0	0	
Sugar Beets	0	0	
Potatoes	4 385	3 993	
Fruits	19 413	17 428	
Vegetables	7 885	8 755	
Tobacco	2 117	2 363	
Other Crops[3]	13 618	13 609	
Total Crops	48 939	48 029	54 664
Cattle & Calves	27 361	29 639	
Hogs	29 347	33 434	
Sheep & Lambs	1 488	1 816	
Dairy Products	74 814	78 904	
Poultry	27 957	31 910	
Eggs	19 708	19 296	
Other Livestock	12 655	12 748	
Total Livestock	193 330	207 747	219 508
Other Cash Receipts[4]	14 310	9 646	9 379
Total Cash Receipts	256 579	265 422	283 551

TABLE 4B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARMING OPERATIONS, 1985 TO 1987, NOVA SCOTIA

	1985	1986	1987
		$ 000	
Taxes[5]	2 177	2 264	
Gross Farm Rent	1 712	1 678	
Wages to Farm Labour	32 164	33 094	
Interest on Indebtedness[6]	13 573	13 470	
Total Machinery Expenses[7]	24 603	24 287	
Fertilizer & Lime[8]	8 405	8 454	
Other Crop Expenses[9]	8 938	9 114	
Feed[10]	55 692	54 411	
Other Livestock Expenses[11]	3 898	4 059	
Repairs to Buildings[5]	4 414	4 635	
Electricity and Telephone	5 048	5 133	
Miscellaneous[12]	10 981	10 767	
Total Operating Expenses	171 605	171 366	171 494
Depreciation on Buildings	6 971	6 553	6 291
Depreciation on Machinery	15 451	14 999	15 224
Total Op. Expenses & Dep. Charges	194 027	192 918	193 009
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	256 579	265 422	283 551
Plus Income-in-Kind	6 108	6 467	6 800
Realized Gross Income	262 687	271 889	290 351
Less Op. Expenses & Dep. Charges	194 027	192 918	193 009
Realized Net Income	68 660	78 971	97 342
Plus Value of Inventory Change	– 3 157	– 2 555	
Total Net Income	65 503	76 416	

See footnotes at end of tables.

TABLE 5A. FARM CASH RECEIPTS, 1985 TO 1987, NEW BRUNSWICK

	1985	1986	1987
		$ 000	
Wheat[1]	685	716	
Oats[1]	1 491	1 191	
Barley[1]	905	1 010	
Crop Insurance, Advances, Deferments and WGSA[2]	4 394	1 683	
Rye	0	0	
Flaxseed	0	0	
Canola/Rapeseed	0	0	
Soybeans	0	0	
Corn	0	0	
Sugar Beets	0	0	
Potatoes	43 871	38 900	
Fruits	5 931	6 477	
Vegetables	9 812	9 914	
Tobacco	1 295	1 167	
Other Crops[3]	9 832	7 560	
Total Crops	78 216	68 618	77 769
Cattle & Calves	19 672	23 671	
Hogs	20 343	22 262	
Sheep & Lambs	312	368	
Dairy Products	51 864	53 489	
Poultry	22 373	25 220	
Eggs	14 270	13 797	
Other Livestock	3 883	3 513	
Total Livestock	132 717	142 320	148 865
Other Cash Receipts[4]	11 772	8 639	9 743
Total Cash Receipts	222 705	219 577	236 377

TABLE 5B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARMING OPERATIONS, 1985 TO 1987, NEW BRUNSWICK

	1985	1986	1987
		$ 000	
Taxes[5]	2 299	2 391	
Gross Farm Rent	1 110	1 055	
Wages to Farm Labour	24 014	23 965	
Interest on Indebtedness[6]	18 330	18 854	
Total Machinery Expenses[7]	27 339	27 206	
Fertilizer & Lime[8]	12 436	12 592	
Other Crop Expenses[9]	10 637	10 369	
Feed[10]	42 309	38 078	
Other Livestock Expenses[11]	2 583	2 618	
Repairs to Buildings[5]	3 212	3 373	
Electricity and Telephone	4 285	4 339	
Miscellaneous[12]	7 750	7 553	
Total Operating Expenses	156 304	152 393	152 877
Depreciation on Buildings	3 680	3 459	3 321
Depreciation on Machinery	15 034	15 250	15 479
Total Op. Expenses & Dep. Charges	175 018	171 102	171 677
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	222 705	219 577	236 377
Plus Income-in-Kind	3 829	4 188	4 544
Realized Gross Income	226 534	223 765	240 921
Less Op. Expenses & Dep. Charges	175 018	171 102	171 677
Realized Net Income	51 516	52 663	69 244
Plus Value of Inventory Change	13 712	– 13 396	
Total Net Income	65 228	39 267	

See footnotes at end of tables.

TABLE 6A. FARM CASH RECEIPTS, 1985 TO 1987, QUEBEC

	1985	1986	1987
		$ 000	
Wheat[1]	14 528	14 860	
Oats[1]	19 190	13 605	
Barley[1]	27 838	25 748	
Crop Insurance, Advances, Deferments and WGSA[2]	5 842	24 329	
Rye	0	0	
Flaxseed	0	0	
Canola/Rapeseed	0	0	
Soybeans	0	0	
Corn	158 489	134 616	
Sugar Beets	1 251	636	
Potatoes	36 944	40 752	
Fruits	42 865	39 658	
Vegetables	102 609	103 780	
Tobacco	25 146	19 821	
Other Crops[3]	109 554	75 688	
Total Crops	544 256	493 493	493 831
Cattle & Calves	273 652	290 247	
Hogs	567 083	667 726	
Sheep & Lambs	5 351	6 181	
Dairy Products	9 863 501	1 008 349	
Poultry	252 917	264 856	
Eggs	91 453	90 448	
Other Livestock	32 865	28 385	
Total Livestock	2 209 671	2 356 192	2 456 060
Other Cash Receipts[4]	338 945	355 303	289 981
Total Cash Receipts	3 092 872	3 204 988	3 239 872

TABLE 6B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARMING OPERATIONS, 1985 TO 1987, QUEBEC

	1985	1986	1987
		$ 000	
Taxes[5]	21 938	22 662	
Gross Farm Rent	20 948	20 522	
Wages to Farm Labour	213 211	212 329	
Interest on Indebtedness[6]	246 550	254 982	
Total Machinery Expenses[7]	258 365	259 445	
Fertilizer & Lime[8]	154 668	150 731	
Other Crop Expenses[9]	127 612	132 012	
Feed[10]	612 852	574 855	
Other Livestock Expenses[11]	64 355	68 442	
Repairs to Buildings[5]	50 536	53 063	
Electricity and Telephone	66 182	68 811	
Miscellaneous[12]	148 405	147 096	
Total Operating Expenses	1 985 622	1 964 950	1 955 252
Depreciation on Buildings	62 458	58 710	56 362
Depreciation on Machinery	189 458	197 001	199 956
Total Op. Expenses & Dep. Charges	2 237 538	2 220 661	2 211 570
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	3 092 872	3 204 988	3 239 872
Plus Income-in-Kind	59 690	64 898	67 960
Realized Gross Income	3 152 562	3 269 886	3 307 832
Less Op. Expenses & Dep. Charges	2 237 538	2 220 661	2 211 570
Realized Net Income	915 024	1 049 225	1 096 262
Plus Value of Inventory Change	−13 248	−6 733	
Total Net Income	901776	1 042 492	

See footnotes at end of tables.

TABLE 7A. FARM CASH RECEIPTS, 1985 TO 1987, ONTARIO

	1985	1986	1987
		$ 000	
Wheat[1]	136 678	124 452	
Oats[1]	2 300	1 835	
Barley[1]	16 495	14 209	
Crop Insurance, Advances, Deferments and WGSA[2]	12 088	30 938	
Rye	716	548	
Flaxseed	0	0	
Canola/Rapeseed	0	0	
Soybeans	229 846	227 457	
Corn	398 612	271 739	
Sugar Beets	0	0	
Potatoes	39 680	38 747	
Fruits	122 120	105 600	
Vegetables	305 122	327 971	
Tobacco	118 337	405 324	
Other Crops[3]	406 588	371 158	
Total Crops	1 788 582	1 919 978	1 625 830
Cattle & Calves	1 133 604	1 169 460	
Hogs	596 194	667 479	
Sheep & Lambs	9 812	10 949	
Dairy Products	939 611	959 622	
Poultry	325 852	339 913	
Eggs	198 530	191 739	
Other Livestock	53 159	53 226	
Total Livestock	3 256 762	3 392 388	3 556 037
Other Cash Receipts[4]	116 251	165 883	194 914
Total Cash Receipts	5 161 595	5 478 249	5 376 781

TABLE 7B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARMING OPERATIONS, 1985 TO 1987, ONTARIO

	1985	1986	1987
		$ 000	
Taxes[5]	48 233	51 368	
Gross Farm Rent	108 488	103 389	
Wages to Farm Labour	463 967	486 629	
Interest on Indebtedness[6]	434 182	411 605	
Total Machinery Expenses[7]	479 067	481 792	
Fertilizer & Lime[8]	276 810	248 874	
Other Crop Expenses[9]	308 500	305 475	
Feed[10]	699 817	661 327	
Other Livestock Expenses[11]	292 237	270 494	
Repairs to Buildings[5]	80 174	84 183	
Electricity and Telephone	109 902	111 290	
Miscellaneous[12]	334 580	334 252	
Total Operating Expenses	3 635 957	3 550 678	3 565 002
Depreciation on Buildings	170 139	159 930	153 533
Depreciation on Machinery	439 209	447 200	453 908
Total Op. Expenses & Dep. Charges	4 245 305	4 157 808	4 172 443
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	5 161 595	5 478 249	5 376 781
Plus Income-in-Kind	65 483	67 565	70 998
Realized Gross Income	5 227 078	5 545 814	5 447 779
Less Op. Expenses & Dep. Charges	4 245 305	4 157 808	4 172 443
Realized Net Income	981 773	1 388 006	1 275 336
Plus Value of Inventory Change	91 300	−359 762	
Total Net Income	1 073 073	1 028 244	

See footnotes at end of tables.

TABLE 8A. FARM CASH RECEIPTS, 1985 TO 1987, MANITOBA

	1985	1986	1987
		$ 000	
Wheat[1]	516 259	545 546	
Oats[1]	7 807	8 629	
Barley[1]	152 677	140 382	
Crop Insurance, Advances, Deferments and WGSA[2]	159 557	232 147	
Rye	10 806	6 859	
Flaxseed	122 505	81 228	
Canola/Rapeseed	141 770	133 540	
Soybeans	0	0	
Corn	18 247	8 062	
Sugar Beets	7 673	8 229	
Potatoes	35 843	37 948	
Fruits	0	0	
Vegetables	12 065	12 909	
Tobacco	0	0	
Other Crops	361 148	59 166	
Total Crops	1 246 357	1 274 645	1 005 092
Cattle & Calves	300 737	295 213	
Hogs	194 512	241 300	
Sheep & Lambs	2 084	2 049	
Dairy Products	102 370	104 294	
Poultry	48 828	47 666	
Eggs	48 354	47 088	
Other Livestock	17 785	19 818	
Total Livestock	714 670	757 428	785 000
Other Cash Receipts[4]	36 886	26 550	17 755
Total Cash Receipts	1 997 913	2 058 623	1 807 847

TABLE 8B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARMING OPERATIONS, 1985 TO 1987, MANITOBA

	1985	1986	1987
		$ 000	
Taxes[5]	36 616	37 824	
Gross Farm Rent	97 819	93 939	
Wages to Farm Labour	84 053	87 746	
Interest on Indebtedness[6]	160 585	162 295	
Total Machinery Expenses[7]	290 069	282 385	
Fertilizer & Lime[8]	218 748	204 529	
Other Crop Expenses[9]	169 130	162 004	
Feed[10]	127 596	110 371	
Other Livestock Expenses[11]	19 963	20 999	
Repairs to Buildings[5]	23 632	25 523	
Electricity and Telephone	33 192	33 799	
Miscellaneous[12]	123 583	124 752	
Total Operating Expenses	1 384 986	1 346 166	1 334 275
Depreciation on Buildings	17 617	16 561	15 402
Depreciation on Machinery	244 020	253 748	255 017
Total Op. Expenses & Dep. Charges	1 646 623	1 616 475	1 604 694
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	1 997 913	2 058 623	1 807 847
Plus Income-in-Kind	16 851	17 823	17 952
Realized Gross Income	2 014 764	2 076 446	1 825 799
Less Op. Expenses & Dep. Charges	1 646 623	1 616 475	1 604 694
Realized Net Income	368 141	459 971	221 105
Plus Value of Inventory Change	294 347	−62 697	
Total Net Income	662 488	397 274	

See footnotes at end of tables.

TABLE 9A. FARM CASH RECEIPTS, 1985 TO 1987, SASKATCHEWAN

	1985	1986	1987
		$ 000	
Wheat[1]	1 685 915	1 610 761	
Oats[1]	4 775	6 025	
Barley[1]	196 225	267 475	
Crop Insurance, Advances, Deferments and WGSA[2]	852 760	879 054	
Rye	13 972	11 080	
Flaxseed	64 383	47 992	
Canola/Rapeseed	410 474	277 025	
Soybeans	0	0	
Corn	0	0	
Sugar Beets	0	0	
Potatoes	6 923	6 085	
Fruits	0	0	
Vegetables	0	0	
Tobacco	0	0	
Other Crops[3]	66 148	77 421	
Total Crops	3 301 575	3 182 918	3 021 903
Cattle & Calves	487 919	451 374	
Hogs	96 244	106 735	
Sheep & Lambs	1 830	1 870	
Dairy Products	71 762	73 461	
Poultry	30 404	30 932	
Eggs	18 700	18 055	
Other Livestock	13 803	13 942	
Total Livestock	720 662	696 369	740 371
Other Cash Receipts[4]	78 480	156 932	13 515
Total Cash Receipts	4 100 717	4 036 219	3 775 789

TABLE 9B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARMING OPERATIONS, 1985 TO 1987, SASKATCHEWAN

	1985	1986	1987
		$ 000	
Taxes[5]	104 853	106 845	
Gross Farm Rent	258 009	235 873	
Wages to Farm Labour	183 246	195 867	
Interest on Indebtedness[6]	401 562	416 913	
Total Machinery Expenses[7]	680 900	672 345	
Fertilizer & Lime[8]	329 124	346 568	
Other Crop Expenses[9]	301 377	304 720	
Feed[10]	110 382	90 072	
Other Livestock Expenses[11]	24 535	26 841	
Repairs to Buildings[5]	31 835	34 382	
Electricity and Telephone	65 294	68 247	
Miscellaneous[12]	268 207	269 358	
Total Operating Expenses	2 759 324	2 768 031	2 680 520
Depreciation on Buildings	52 189	49 058	45 624
Depreciation on Machinery	630 797	625 159	628 285
Total Op. Expenses & Dep. Charges	3 442 310	3 442 248	3 354 429
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	4 100 717	4 036 219	3 775 789
Plus Income-in-Kind	40 498	41 915	43 943
Realized Gross Income	4 141 215	4 078 134	3 819 732
Less Op. Expenses & Dep. Charges	3 442 310	3 442 248	3 354 429
Realized Net Income	698 905	635 886	465 303
Plus Value of Inventory Change	173 840	751 855	
Total Net Income	872 745	1 387 741	

See footnotes at end of tables.

TABLE 10A. FARM CASH RECEIPTS, 1985 TO 1987, ALBERTA

	1985	1986	1987
		$ 000	
Wheat[1]	703 228	511 634	
Oats[1]	17 584	15 572	
Barley[1]	270 431	319 065	
Crop Insurance, Advances, Deferments and WGSA[2]	489 663	412 240	
Rye	4 815	6 393	
Flaxseed	7 250	5 676	
Canola/Rapeseed	343 386	283 674	
Soybeans	0	0	
Corn	0	0	
Sugar Beets	3 337	8 456	
Potatoes	27 940	26 477	
Fruits	0	0	
Vegetables	27 027	25 925	
Tobacco	0	0	
Other Crops[3]	56 462	63 225	
Total Crops	1 951 123	1 678 337	1 597 834
Cattle & Calves	1 170 120	1 110 672	
Hogs	245 939	273 444	
Sheep & Lambs	6 743	6 829	
Dairy Products	217 534	222 137	
Poultry	88 570	85 840	
Eggs	45 986	44 286	
Other Livestock	26 227	27 024	
Total Livestock	1 801 119	1 770 232	1 768 501
Other Cash Receipts[4]	98 567	273 992	33 672
Total Cash Receipts	3 850 809	3 722 561	3 400 007

TABLE 10B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARMING OPERATIONS, 1985 TO 1987, ALBERTA

	1985	1986	1987
		$ 000	
Taxes[5]	47 766	50 393	
Gross Farm Rent	181 424	173 613	
Wages to Farm Labour	200 564	213 912	
Interest on Indebtedness[6]	418 752	408 469	
Total Machinery Expenses[7]	550 098	411 564	
Fertilizer & Lime[8]	357 857	314 500	
Other Crop Expenses[9]	211 357	201 500	
Feed[10]	250 411	166 384	
Other Livestock Expenses[11]	127 569	117 700	
Repairs to Buildings[5]	45 720	49 378	
Electricity and Telephone	61 543	63 766	
Miscellaneous[12]	239 960	234 796	
Total Operating Expenses	2 693 021	2 405 975	2 536 898
Depreciation on Buildings	100 922	94 866	90 123
Depreciation on Machinery	547 788	549 821	552 570
Total Op. Expenses & Dep. Charges	3 341 731	3 050 662	3 179 591
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	3 850 809	3 722 561	3 400 007
Plus Income-in-Kind	35 817	34 758	36 014
Realized Gross Income	3886 626	3 757 319	3 436 021
Less Op. Expenses & Dep. Charges	3 341 731	3 050 662	3 179 591
Realized Net Income	544 895	706 657	256 430
Plus Value of Inventory Change	−88 118	568 827	
Total Net Income	456 777	1 275 484	

See footnotes at end of tables.

TABLE 11A. FARM CASH RECEIPTS, 1985 TO 1987, BRITISH COLUMBIA

	1985	1986	1987
		$ 000	
Wheat[1]	16 366	8 232	
Oats[1]	1 177	690	
Barley[1]	10 355	4 530	
Crop Insurance, Advances, Deferments and WGSA[2]	20 930	14 123	
Rye	145	72	
Flaxseed	0	0	
Canola/Rapeseed	10 153	4 332	
Soybeans	0	0	
Corn	0	0	
Sugar Beets	0	0	
Potatoes	22 123	22 313	
Fruits	96 331	95 939	
Vegetables	77 583	76 592	
Tobacco	0	0	
Other Crops[3]	94 828	97 992	
Total Crops	349 991	324 815	338 879
Cattle & Calves	149 590	152 056	
Hogs	46 847	53 314	
Sheep & Lambs	1 734	1 780	
Dairy Products	234 731	240 371	
Poultry	91 659	99 401	
Eggs	59 537	57 598	
Other Livestock	20 866	20 931	
Total Livestock	604 964	625 451	644 858
Other Cash Receipts[4]	55 496	52 503	47 698
Total Cash Receipts	1 010 451	1 002 769	1 031 435

TABLE 11B. FARM OPERATING EXPENSES, DEPRECIATION CHARGES, AND NET INCOME FROM FARM OPERATIONS, 1985 TO 1987, BRITISH COLUMBIA

	1985	1986	1987
		$ 000	
Taxes[5]	14 517	15 098	
Gross Farm Rent	17 461	17 112	
Wages to Farm Labour	147 340	148 666	
Interest on Indebtedness[6]	129 098	126 043	
Total Machinery Expenses[7]	103 532	95 441	
Fertilizer & Lime[8]	30 689	29 406	
Other Crop Expenses[9]	36 113	37 705	
Feed[10]	121 255	111 070	
Other Livestock Expenses[11]	19 273	20 148	
Repairs to Buildings[5]	13 955	15 071	
Electricity and Telephone	22 555	22 881	
Miscellaneous[12]	49 921	49 200	
Total Operating Expenses	705 709	687 841	681 649
Depreciation on Buildings	33 423	31 418	29 219
Depreciation on Machinery	74 979	75 912	76 292
Total Expenses & Dep. Charges	814 111	795 171	787 160
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS			
Cash Receipts	1 010 451	1 002 769	103 1435
Plus Income-in-Kind	19 883	20 454	20 267
Realized Gross Income	1 030 334	1 023 223	1 051 702
Less Op. Expenses & Dep. Charges	814 111	795 171	787 160
Realized Net Income	216 223	228 052	264 542
Plus Value of Inventory Change	– 28 592	3 026	
Total Net Income	187 631	231 078	

See footnotes at end of tables.

FOOTNOTES

[1] Includes Canadian Wheat Board payments and Ontario Wheat Producers Marketing Board payments.

[2] Includes net cash advances on farm-stored grains and deferred grain receipts plus payments under the Western Grain Stabilization Act to producers in Western Canada and crop insurance payments.

[3] Includes cash receipts from floriculture and nursery, mustard, sunflower, non-grain advances, clover and grass, hay and clover, dry beans, dry peas, and miscellaneous crops.

[4] Includes receipts from the sale of forest and maple products, as well as dairy supplementary payments, deficiency payments, provincial income stabilization payments, and other supplementary payments made by the federal and provincial goverments.

[5] Owned land and buildings only.

[6] Interest payments on outstanding farm mortgage debts for owned land and buildings, together with interest payments on all other farm business debts, adjusted for interest rebates.

[7] For farm business uses of fuel and machinery repairs.

[8] Adjusted for fertilizer and lime rebates.

[9] Includes pesticides, seed, irrigation, twine, wire and containers, adjusted for pesticide rebates.

[10] Purchases through commercial channels only, ajusted for feed rebates.

[11] Includes livestock purchases, artificial insemination charges, purebred livestock registration fees and veterinary expenses.

[12] Includes fencing, custom work, heating fuel, stabilization levies, insurance premiums and other expenses not previously specified.

CONCURRENT SESSIONS

LIVESTOCK AND POULTRY SESSION

The outlook for feed grains for the North American livestock industry

C.V. Fulton

INTRODUCTION

Sharply lower feed grain prices have provided a strong incentive to increase livestock and poultry production this year. Because of the larger, burdensome, world supplies of feed grains, in particular in the United States, feed grain prices are expected to remain depressed for the next one to two years. These lower grain prices can be expected to encourage the expansion of livestock and poultry production in 1987 and 1988.

FEED GRAIN SUPPLY

The supply of corn in the United States has increased sharply since 1984-85, with this year's supply exceeding last year's record supply by 44 million tonnes. Although domestic use and exports are forecast to increase marginally in 1986-87, ending stocks are expected to increase to 143 million tonnes, about 100 million tonnes more than they were at the end of 1984-85. Thus large corn supplies in the United States are expected to continue for the next one to two years.

The supply of barley in Canada this year increased 25% to 18.3 million tonnes, due to record barley production in Western Canada. Despite higher exports in 1986-87, ending stocks are expected to increase to 5.2 million tonnes. In contrast to barley, the total supply of corn in Canada in 1986-87 is estimated to be down 5% to 8.8 million tonnes due to lower production. While feed grain supplies are expected to remain large in Western Canada next year, in part because of the large carryover of lower quality wheats, Eastern feed grain supplies will likely be lower.

FEED GRAIN PRICES

Figure 1 illustrates what has happened to market prices for feed grains since 1980. Observe the effect of the 1980 and 1983 droughts in the United States on U.S. and Canadian corn prices. The rise in prices in 1983 and 1984 was also influenced by the large reduction in planted area in 1983 in the United States. Although barley prices in Alberta are related to U.S. and Canadian corn prices, they are also influenced by supply and demand conditions in Western Canada.

The 1985 U.S. Farm Bill (Food Security Act of 1985) passed in December 1985 contained provisions for sharp reductions in the loan rates for corn and other grains. For 1986-87, the loan rate for corn was reduced to U.S. $1.92 per bushel from U.S. $2.55 per bushel in 1985-86. This permitted the farm price for corn in the United States to decline sharply in 1986, in response to the burdensome supplies of corn in that country. Corn prices this fall in Iowa were the lowest since 1972. Although prices have strengthened in recent weeks, they will remain considerably below the loan rate for most of the crop year. The average farm price for corn in 1987 is expected to be about one half of what it was in 1984. The decline in Canadian feed grain prices has followed closely that in the United States. Farm prices for barley in Alberta and corn in Ontario in 1987 will likely be similar to the levels that existed in the fourth quarter of 1986.

The countervail on U.S. corn imports should strengthen Canadian corn prices. However, Canadian corn prices will remain tied to world coarse grain prices because of the large supplies of competing feed grains, in particular barley and feed wheat from Western Canada, and the need to export a portion of the corn crop at a price that is competitive with that of other exporters.

What is likely to happen to feed grain prices beyond 1987? This will depend primarily on what happens in the United States. Although the area planted to corn next year is forecast to decline significantly because of the 15% paid diversion program, the good soil moisture reserves in the cornbelt this fall will likely result in above average yields. Thus it will probably require several years for the United States to bring its corn supplies in line with demand.

Consequently feed grain prices can be expected to remain depressed for the next several years with significant recovery in prices not expected until the 1988-89 or 1989-90 crop year.

LIVESTOCK PRODUCER PARTICIPATION IN U.S. CORN PROGRAM

I would like to turn to the last topic and that is to compare a livestock or poultry or dairy producer who is not a participant in the U.S. corn program to one that is a participant. However, to understand what is involved, I would like to briefly describe how the U.S. corn program operates. The operation of the U.S. corn program as well as the programs for wheat and other feed grains can be compared to driving a car with one foot on the brake and the other foot on the accelerator.

Complicating the operation of U.S. farm programs is weather which can act as a brake or an accelerator on production.

In order for an individual producer to be eligible to receive program benefits, he must divert a portion of his corn base area out of corn production. For 1986-87 this was 20%. In return for having set aside this portion of his corn base he is eligible to receive a deficiency payment from the U.S. Government on his allowable production. The deficiency payment per bushel is the difference between the target price, which is the price guarantee, and the loan rate or the average farm price, whichever is higher. In Figure 2, the sharp reduction in the loan rate for 1986-87 and the subsequent decline in farm prices has greatly increased the deficiency payment per bushel for this year. For 1986-87 it is expected to be the maximum permitted, U.S. $1.11 per bushel, as the farm price is expected to average below the loan rate. The actual payment will be reduced somewhat by the Gramm-Rudman-Hollings Deficit Reduction provisions.

Tables 1 to 5 compare the out-of-pocket costs to produce corn for a non-participating livestock producer and a participating livestock producer in the 1986-87 U.S. Corn program. The non-participant is able to plant his entire 100 acre base to corn, whereas the participant must divert 20 acres to conservation use (Table 1). In order to have the same quantity of corn, I have assumed that the participant purchases an amount of corn equivalent to the loss in production. In terms of feed requirements, the total quantity of corn (13 500 bu) would be sufficient to feed over 900 hogs in a farrow-to-finish operation in Iowa.

In Table 2, the non-participant has variable costs of $13 900 or $1.03 per bushel of production. In the case of the participant, his total variable costs are $15 335 or $1.14 per bushel which includes the purchase of 2700 bushels of corn. Tables 3 and 4 summarize the direct government payments and government support through the commodity loan program that a corn producer receives from participation in the corn program.

Whereas the non-participant receives no government payments, the participant receives $11 025 in direct government payments and earns an additional $1620 from the Commodity Credit Corporation (CCC) loan program (Table 5). These payments reduce his out-of-pocket variable costs to $2690 or $0.20 per bushel for a difference of $0.83 per bushel between the non-participant and the participant. Given this difference in costs there is tremendous incentive for livestock, poultry or dairy producers, who raise their own feed, to participate in the U.S. farm commodity programs. However, there are several points that should be considered when making this comparison:

1. The costs used do not include fixed costs such as depreciation, interest costs on capital investments in buildings and machinery, land rent, labour costs, and a return to management.
2. As farm prices rise, the financial incentive to participate declines primarily due to the reduction in the size of the deficiency payment, and also the higher cost associated with purchased corn.
3. Beyond a certain size of operation, there are limitations on the size of the government payments which make participation less attractive. Hence there would be less incentive for a large feed lot operator or an integrated broiler producer to participate than a hog producer in Iowa or a dairy farmer in Wisconsin.
4. The benefits, of course, are also limited by the individual livestock producer's existing corn base.
5. Direct government payments such as the deficiency payments do not in themselves influence a corn producer's decision to market his corn or feed it to his livestock. The decision to expand the livestock

enterprise depends on other factors besides feed costs such as market prices, capacity utilization of existing facilities and capital requirements for expansion including the financial position of the individual producer. The weak financial situation of many farmers is a reason given for the delay in expanded hog production in the United States. Nevertheless, with hog prices at U.S. $50 per cwt, corn is worth U.S. $3.90 per bushel in Iowa if it is fed to hogs, and it is worth U.S. $4.70 per bushel if hogs are U.S. $55 per cwt.

6. Finally, high participation by livestock producers in the feed grain programs increases the effectiveness of the acreage diversion programs to reduce grain production and to strengthen grain prices.

Tables 6 through 10 compare the estimated out-of-pocket costs for corn production in Central Iowa for a non-participating livestock producer and a participating livestock producer in the 1987-88 U.S. corn program. For 1987-88, the participating corn producer can elect either to set-aside the minimum 20% of his corn base to conservation use or to divert an additional 15% of his corn base for which he receives a diversion payment of U.S. $2 per bushel. Under the second option, the total diverted area to conservation use is 35% of the corn base area. For 1987-88 there continues to be a strong incentive for livestock, poultry or dairy producers, who raise their own feed, to participate in the U.S. feed grain program.

CONCLUSION

Burdensome supplies of feed grains in the United States and large supplies of feed grains in Canada will continue to depress feed grain prices in the foreseeable future. This will provide a strong incentive to expand livestock production in North America, in particular pork and poultry production.

TABLE 1 NON PARTICIPATING/PARTICIPATING IOWA LIVESTOCK PRODUCER IN THE 1986/87 U.S. CORN PROGRAM

	Non Participant	Participant
Base Area	100 AC.	100 AC.
Area in Corn	100 AC.	80 AC.
Diverted Area	–	20 AC.
Actual Yield	135 BU./AC.	135 BU./AC.
Program Yield	–	127 BU./AC.
Production	13 500 BU.	10 800 BU.
Production Loss from Diverted Area	–	2700 BU.

TABLE 2 NONPARTICIPATING/PARTICIPATING IOWA LIVESTOCK PRODUCER IN THE 1986/87 U.S. CORN PROGRAM

	Non Participant	Participant
Variable Costs		
Planted Area	$13 900	$11 120
Diverted Area	–	$ 300
Purchase of Additional Corn at $1.45/BU.	–	$3 915
Total Variable Costs	$13 900	$15 335
Per Bushel	$1.03	$1.14

TABLE 3 NON PARTICIPATING/PARTICIPATING IOWA LIVESTOCK PRODUCER IN THE 1986/87 U.S. CORN PROGRAM

	Non Participant	Participant
Government Payments		
Diversion Payments on 2.5 Acres	–	$ 232
Deficiency Payment at $1.11/BU. on 10160 BU.	–	$11 278
GRH Deficit Reduction 4.3%	–	$ (485)
Total Direct Government Payments	–	$11 025
Per Bushel (13 500 BU.)	–	$0.82

TABLE 4 NON PARTICIPATING/PARTICIPATING IOWA LIVESTOCK PRODUCER IN THE 1986/87 U.S. CORN PROGRAM

	Non Participant	Participant
CCC Loan Program		
Certificate Redemption of CCC Loans on 1550 BU.	–	$ 700
Forfeiture of CCC Loans on 4625 BU. and Purchase of 4625 BU. of Corn	–	$ 920
Net Revenue	–	$1620
Per Bushel	–	$0.12

TABLE 5 NON PARTICIPATING/PARTICIPATING IOWA LIVESTOCK PRODUCER IN THE 1986/87 U.S. CORN PROGRAM

	Non Participant	Participant
Total Variable Costs	$13 900	$15 335
Per Bushel (13 500 BU.)	$1.03	$1.14
Total Direct Government Payments	–	$11 105
Net Revenue from CCC Loan Program	–	$ 1 620
Out of Pocket Variable Costs	$13 900	$ 2 690
Per Bushel (13 500 BU.)	$1.03	$0.20
Difference Per Bushel	–$0.83	

TABLE 6 NON PARTICIPATING/PARTICIPATING IOWA LIVESTOCK PRODUCER IN THE 1987/88 U.S. CORN PROGRAM

	Non Participant	Participant	
Base Area	100 AC.	100 AC.	100 AC.
Area in Corn	100 AC.	80 AC.	65 AC.
Diverted Area - Unpaid	–	20 AC.	20 AC.
- Paid			
Actual Yield	135 BU./AC.	135 BU./AC.	135 BU./AC.
Program Yield	–	127 BU./AC.	127 BU./AC.
Production	13 500 BU.	10 800 BU.	8 775 BU.
Production Loss from Diverted Area	–	2 700 BU.	4 725 BU.

TABLE 7 NON PARTICIPATING/PARTICIPATING IOWA LIVESTOCK PRODUCER IN THE 1987/88 U.S. CORN PROGRAM

	Non Participant	Participant	
Variable Costs			
Planted Area	$13 900	$11 120	$ 9 035
Diverted Area	–	$ 300	$ 525
Purchase of Additional Corn at $1.60/BU.	–	$ 4 320	$ 7 560
Total Variable Costs	$13 900	$15 740	$17 120
Per Bushel (13 500 BU.)	$1.03	$1.17	$1.27

TABLE 8 NON PARTICIPATING/PARTICIPATING IOWA LIVESTOCK PRODUCER IN THE 1987/88 U.S. CORN PROGRAM

	Non Participant	Participant	
Government Payments			
Diversion Payments on 15 Acres	–	–	$ 3 810
Deficiency Payment at $1.21/BU.	–	$12 294	$ 9 989
Total Direct Govt. Payments	–	$12 294	$13 799
Per Bushel (13 500 BU.)	–	$0.91	$1.02

TABLE 9 NON PARTICIPATING/PARTICIPATING IOWA LIVESTOCK PRODUCER IN THE 1987/88 U.S. CORN PROGRAM

	Non Participant	Participant	
CCC Loan Program			
Certificate Redemption of CCC Loans	–	$540	$675
Forfeiture of CCC Loans	–	[illegible]	–
Net Revenue	–	$540	$675
Per Bushel (13 500 BU.)	–	$0.04	$0.05

TABLE 10 NON PARTICIPATING/PARTICIPATING IOWA LIVESTOCK PRODUCER IN THE 1987/88 U.S. CORN PROGRAM

	Non Participant	Participant	
Total Variable Costs	$13 900	$15 740	$17 120
Per Bushel	$1.03	$1.17	$1.27
Less:			
Total Direct Govt. Payments	–	$12 294	$13 799
Net Revenue from CCC Loan Program	–	$ 540	$ 675
Out-of-pocket Variable Costs	$13 900	$ 2 906	$ 2 646
Per Bushel (13 500 BU.)	$1.03	$0.22	$0.20
Difference Per Bushel		–$0.81	-$0.83

FIGURE 1. FARM PRICES FOR FEED GRAINS UNITED STATES AND CANADA

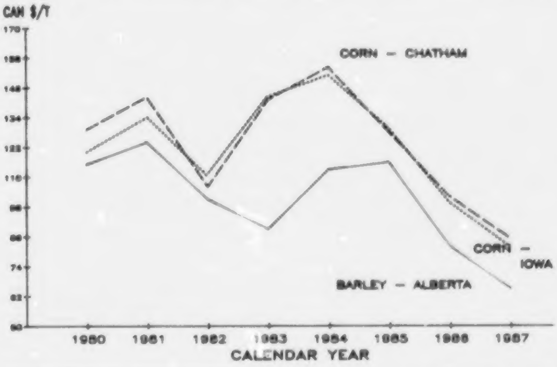
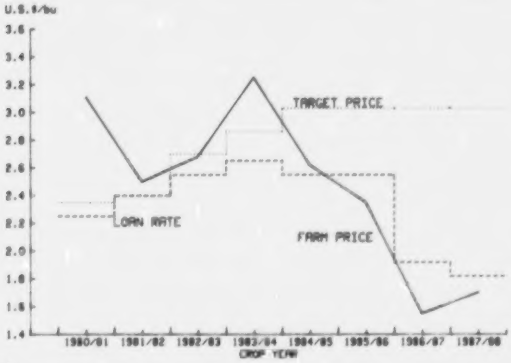


FIGURE 2. CCC LOAN RATES, TARGET PRICES AND AVERAGE FARM PRICES FOR U.S. CORN



Meat trade highlights in Canada

A.M. Boswell

INTRODUCTION

Good morning, ladies and gentlemen, and thank you, Mr. Chairman. My comments this morning will be confined to a short review of Canada's relative trade position in the meat industry. I do not plan to focus on the discussion surrounding international trade policies or programs in meat and/or respective countries' point of view. In these days, international meat trade has become like Newton's third law which says: "for every action, there is an equal and opposite reaction".

IMPORTANCE OF MEAT TRADE TO CANADA

Throughout history, foreign trade in live animals and meat products has been important to Canada. Canadian trade in both exporting and importing has been largely voluntary. Basically, trade has occurred in response to price differences and quality factors indicative of comparative production advantages. To trade was a better bargain than not to trade.

The extent to which Canada exports some of its livestock and red meat production is surprisingly large. One interesting indicator of Canada's foreign trade in livestock and meat products is the percent of the value of total farm production, that is, farm cash income, involved in foreign trade. The common denominator is dollars since various classes of product enter into Canada's meat trade (Table 1). Exports in 1985 represented 13% of the cash receipts from Canadian production of cattle and calves, 39% of hog production, 14% for sheep and lamb and 4% of all poultry production; although not all export earnings are returned to farmers. Part of the total return is shared among processors, merchandisers, agribusiness firms and others to cover costs of getting products from the farm to port location and other export points.

For the three red meats listed in Table 1, the major export - import categories include the value of all dressed product, including canned and variety meat together with live animals. If for beef and veal the byproduct trade values of cattle hides and tallow were included here, then the export percentage of farm receipts for 1985 would have increased from 13 to 20, and the import percentage from 9 to 12. Also, if the byproduct wool was included for sheep and lambs, the import percentage would be even higher than reported in this chart. For poultry, all meat and egg products together with live and related product trade values are included. The meat industry by nature is characterized by a high level of value added.

The facts apparent here also provide a further perspective between the relative net trade balance for each meat sector. Since the early 1970s, the export outlet has become an increasingly important safety valve for the Canadian red meat industry.

CANADA: COMPONENTS OF LIVESTOCK AND POULTRY EXPORT

Figure 1 shows an "overview" of the relative importance of the major components of Canada's export value of livestock and poultry since 1970.

The role played by international trade in Canada's meat industry is less well understood and thus less well recognized than is the case with many other agricultural commodities, for example, wheat and grains. This reflects the wide variety of forms in which trade takes place. Meat is traded in the form of carcasses, cuts, canned, sausages and live animals. In addition, sales of byproducts such as edible offals (variety meats), tallow and hides are also important trade components.

Since 1976, the annual growth rate in total export value, with the exception of 1983, has been relatively sharp, which was supported by the increases in red meat, live animals, raw cattle hides, tallow and to a lesser degree poultry exports. Much of the increase in dressed exports of red meats and live animals comes from the hog sector but dressed beef and live beef cattle exports have also shown sizeable increases since the late 1970s. On a value basis, total exports of all livestock and poultry products (excluding dairy) for the year 1985 totaled $1573 million, down 1% from the 1984 value.

The major components of Canada's export value of livestock and poultry for the year 1985 are as follows (Appendix A):

- *Dressed exports of red meat*, the largest export category, total nearly $800 million or 51% of total livestock and poultry exports. In terms of dressed exports, pork accounted for 66% and beef and veal 31%. Only a small level of mutton and lamb is exported in the dressed form.
- *Live beef cattle, hogs, sheep and lambs* totaled $375 million or 24% of total exports for 1985. In terms of live export value, beef cattle (breeding, slaughter, feeders and veal) accounted for 56%, hogs 43% and sheep and lambs 1%.
- *Raw cattle hides and leather*, primarily cattle hides, totaled nearly $200 million or 13% of total exports in 1985.
- *Tallow and lard*, primarily tallow from slaughtered cattle totaled $93 million or 6% of total exports.
- *Other*[1] exports of livestock byproducts totaled $58 million for 1985.
- All poultry exports from meat and egg production in Canada for 1985 totaled $52 million.

CANADA: COMPONENTS OF LIVESTOCK AND POULTRY IMPORTS

As with exports, an "overview" of the same major components of Canada's import value of livestock and poultry since 1970 is shown in Figure 3.

Total imports for all components add up to $793 million for 1985 and when compared to the total export value of $1573 million gives a positive net trade balance of $780 million for this country. Canada has maintained a strong net export position for every year since 1978 in the total export-import picture. Between 1970 and 1977, however, Canada was in a net import position.

In regard to the major trade categories shown in Figures 1 and 2 Canada has become a large net exporter of dressed red meat, live animals, tallow, cattle hides and leather but a net importer of the class "others" (mainly because of wool imports) and also a net importer in total poultry trade.

The major components of Canada's import value of livestock and poultry for the year 1985 are as follows (Appendix B):

- Total imports of *dressed red meats* for 1985 totaled $377 million but import levels have remained virtually stationary since 1976 with the decreases in dressed pork imports offsetting the increases in dressed beef imports. For 1985, imports of beef and veal on a value basis accounted for 73% of total dressed imports, pork 11% and imports of mutton and lamb 8%.
- Imports of *live animals* totaled $53 million for 1985 and were primarily slaughter cattle and some slaughter lambs from the U.S. which continue to fluctuate from year-to-year.
- Canada's imports of *raw cattle hides and leather* are mainly finished leather whereas exports from this country are largely raw cattle hides. Imports totaled $154 million in 1985.
- Canada's imports of *tallow and lard* only amounted to $7 million in 1985 and have never been large.
- Imports of wool accounted for over 40% of the class "*other*" which totaled $88 million in 1985. In addition to wool this "other" category includes gelatin, rennet, sausage casings, animal grease, oils, and fats.
- Total *Poultry imports* have continued to increase and in 1985 reached $113 million.

In the meat industry they say there are two things you are better off not watching in the making-sausages and econometric estimates. I would add trade flow charts for livestock and meat.

CANADA'S MEAT TRADE HIGHLIGHTS IN 1986

Beef: (Table 2)

Turning to *Canada's beef and veal exports*, official trade data from Statistics Canada to October 1, this year, compared to the same nine months last year, shows the value of dressed beef and veal exports (fresh, frozen, cured, canned, offals) at $169.5 million, down 2% from 1985. The export volume, excluding offals, at 140 million pounds was virtually the same as a year ago.

Live exports of beef cattle (breeding, slaughter, feeders, veal) at $142.3 to October 1, are down 14% from January-September 1985. Exports of both feeder cattle and veal calves are sharply below last year but exports of slaughter cattle at about 155 thousand head are about 12% above a year ago. The make-up of exports of slaughter cattle to the U.S. this year switched to a higher proportion of steers and heifers, primarily from feedlots in Alberta, compared to the traditional high proportion of slaughter cow exports from Canada. This reflects the relatively low level of the Canadian dollar to the U.S. dollar, higher carcass weights and lower cow numbers in Canada, and the increasing tight supply of fed cattle in the U.S. Pacific Northwest.

For dressed beef and veal exports from Canada, the U.S. remains the major outlet accounting for nearly 90% of total export value. Japan follows with 8%. The export of beef byproducts goes to several foreign markets. The major foreign outlets for beef offals (variety meat) are the EEC, accounting for nearly 60% of total exports, the U.S. at 16% and Japan at 10%. Major foreign markets for Canadian cattle hides in 1986 are Taiwan at 46% of total value, South Korea at 18%, the U.S. at 11% and both Japan and the EEC each around 8%. For tallow exports the major foreign outlets are the EEC at nearly 40% of total tallow exports, Japan at 25% and several other smaller outlets including the U.S. at only 3%.

On the import side, *dressed imports of beef and veal* to October 1, this year totaled $218.5 million, down 3% from a year ago. The volume imported, at 135 million pounds, was also down about 3%. In 1986, on a value basis, the U.S. is the leading source of dressed beef imports, accounting for nearly 40% of the total followed by Australia at 34% and New Zealand at 21%. The U.S. is also the sole source of live cattle into Canada primarily for immediate slaughter. On balance, Canada is a net importer of dressed beef and veal in terms of value, a net exporter in terms of volume and a large net exporter in terms of live beef cattle, hides and tallow.

Pork: (Table 3)

For dressed pork exports (fresh, frozen, cured, sausages offals) the total value to October 1, 1986 increased to $519 million up 35% from January-September 1985. The export volume excluding offals, at 353 million pounds, was 12% above a year ago. Dressed exports to the U.S., at $390 million, were up 30% and to Japan, at $108 million, up over 65% from the first 9 months of 1985. The outlet to Japan since 1981 has dropped from nearly one-half of Canada's dressed pork exports to less than one-quarter in 1986. From 1975 to 1979, Japan was the largest outlet for Canadian pork exports. Increased export value in 1986 reflects higher average export prices and also the fact that the total export volume to the U.S. is up 10% and to Japan up 21%. Canadian imports of dressed pork have dropped off in recent years with imports from the U.S. accounting for less of the total while imports from Denmark have increased.

Live swine exports to October 1, this year, primarily for immediate slaughter in the U.S., totaled $67 million, sharply lower by 54% from a year ago. The volume was 410 thousand head compared to about one million head in January-September 1985, a decrease of nearly 60%, which reflects the U.S. countervailing duty on Canadian live hogs of Can. $4.386¢/pound.

Sheep and Poultry: (Table 4)

Exports of sheep and lambs from Canada to October 1, this year, at $19 million, are primarily live lambs to the U.S. which totaled 18 500 head, up over 35% from a year ago. Dressed and live imports of sheep and lambs totaled $31.3 million, up 30% from January-September 1985. The increase is largely the result of a 20% increase in dressed imports of mutton (4.6 million pounds, up 27%) and lamb (18.7 million pounds, up 18%), whereas live imports from the U.S., at 29 500 head, were 9% below the first nine months of 1985.

The *total poultry export value* to October 1, this year was $31.3 million, down 4% from a year ago, whereas total imports, at $83.9 million, are 11% above January-September 1985.

TRADE PROSPECTS

When people talk about the trade outlook for livestock they never want to be too sure of what they are sure of. Notwithstanding the present study of Canadian exports of beef by the U.S. International Trade Commission and U.S. countervailing duties on Canada's live hog exports, the USDA outlook conference in early December expected U.S. pork imports for 1987 to increase from the 1986 level and that both beef and pork output for 1987 is expected to be below 1986 levels in that country.

The Japanese yen strengthened against the Canadian dollar in 1986 underlying increased pork exports from Canada. Total pork imports into Japan to October 1, this year are up about 12% from the same period in 1985 and for the year could reach or exceed the all time high of 1984. However, competition for pork exports to Japan is strong, especially from Denmark, the U.S. and more recently from Taiwan which in 1986 equals Denmark's share of pork exports to Japan. Denmark and Taiwan together account for three-fourths of Japan's pork imports in 1986. Japan slaughtered around 20.5 million hogs a year in 1985 and 1986 but an increase of 3-4% is expected for 1987. Imports of beef into Japan have continued to increase because of a strong and growing demand. This has caused beef prices in Japan to rise for domestic and imported product and to release beef import quotas in 1986 earlier than usual. Global production of cattle hides and tallow for 1987 is expected to show a year-to-year decrease. The decrease in production is in conjunction with an expected drop in cattle slaughter.

Future exports of livestock and meat products will depend heavily on foreign trade policies of some key industrialized countries. Livestock producers in many countries have strong political influence and have discouraged importing products that would depress their prices and/or add to domestic surpluses. The problem of foreign restrictions on livestock and meat exports is a difficult one that will not be resolved quickly.

COMMODITY EXPORT RANK

In closing, foreign trade in the meat sector is a big business in Canada and in recent years has become increasingly more important. For 1986, Canada's exports from swine production will move closer to $800 million and move up to rank second as an agricultural export commodity (Table 5). For the year 1986, both export and import values of dressed beef and live beef cattle combined may be expected to average slightly below their respective 1985 values but in total trade Canada will remain in a net export position. In fact, if cattle hides and tallow were included here, cattle and beef exports would slightly exceed the combined value of hog and pork exports during the last few years.

The Canadian livestock industry through the past several decades has moved from a domestic frame of reference to a North American market and into a worldwide meat economy.

Today, foreign trade in meat is highly competitive. The "bad news" scenario painted for the global coarse grain sector could in the longer term underlie that common old adage which says "cheap feed in the longer-term equals abundant supplies of cheap meat". Hence, Canada's competitive position in all aspects of the livestock industry will in the immediate future become increasingly more important.

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[1] Wool, gelatin, rennet, sausage casings, bones, dried blood, glands, animal material for drugs, semen, animal oil, fats and glue.

TABLE 1. CANADA: FARM CASH INCOME AND % FOREIGN TRADE

	Farm cash income	Exports		Imports	
	Mil.$	Mil.$	% F.C.I.	Mil.$	% F.C.I.
Beef/Veal					
1971-75	1515.0	86.8	6	147.1	10
1976-80	2817.3	219.8	8	197.0	7
1981-85	3514.5	381.3	11	305.4	9
1985	3592.1	454.0	13	323.8	9
Pork					
1971-75	682.4	97.6	14	38.0	6
1976-80	1105.6	222.1	20	111.0	10
1981-85	1798.9	595.5	33	47.3	3
1985	1821.6	702.3	39	46.6	3
Sheep/Lambs					
1971-75	10.6	1.5	14	22.2	209
1976-80	17.1	2.4	14	30.7	180
1981-85	26.6	3.5	13	33.8	127
1985	29.7	4.2	14	31.6	106
All Poultry					
1971-75	592.3	16.1	3	23.3	4
1976-80	889.5	28.6	3	70.6	8
1981-85	1309.4	52.6	4	99.5	8
1985	1409.6	52.0	4	113.3	8

CANADA'S FOOD AND BEVERAGE INDUSTRY 1984

Top industries	Value of shipments	% of total	Cost of materials & supplies	% of total
	Million $	%	Million $	%
Red Meats	8 277.2	23	6 759.6	28
Poultry	1 454.0	4	1 090.0	5
Total	9 731.2	27	7 849.6	33
Dairy	6 095.5	17	4 645.2	19
Feed Milling	2 660.2	7	2 107.3	9
Fruit & Veg.	2 258.6	6	1 248.3	5
Bakery Products	1 830.6	5	766.2	3
Fish	1 591.8	4	954.1	4
Brewing	1 904.5	5	521.9	2
Soft Drinks	1 588.7	4	866.3	4
Others	8 514.1	24	4 958.6	21
Total	36 175.2	100	23 917.5	100

TABLE 2. CANADA'S BEEF AND VEAL TRADE (MIL.$)

			January 1 to October 1	
	1984	1985	1986	% year ago
Exports Dressed[1]	211.7	241.6	169.5	−2
% U.S.	87	85	83	
Live[2]	218.6	212.5	142.3	−14
% U.S.	98	97	99	
Hides[3]	192.3	171.3	170.9	+36
% U.S.	21	26	15	
Tallow	96.0	90.6	50.1	−33
% U.S.	3	4	3	
Total	718.6	716.0	532.8	−1
% U.S.	61	65	58	
Imports Dressed[1]	301.9	274.0	218.5	−3
% U.S.	37	40	40	
Live[2]	34.7	49.8	32.8	29
% U.S.	100	100	96	
Hides[3]	130.2	108.8	83.0	+1
% U.S.	52	48	55	
Tallow	4.4	2.7	2.2	+1
% U.S.	100	100	100	
Total	471.2	435.3	336.6	−5
% U.S.	46	49	50	

[1] Fresh, frozen, cured, canned, offals

[2] Breeding, slaughter, feeders, veal

[3] Rawhides/cattle leather

TABLE 3. CANADA: PORK TRADE (MIL.$)

			January 1 to October 1	
	1984	1985	1986	% year ago
Exports Dressed				
Total	445.9	489.7	480.1	+38
U.S.	313.9	379.0	365.0	+31
Japan	123.6	102.1	107.0	+68
Offals				
Total	40.8	40.1	30.9	+1
U.S.	25.6	23.7	18.1	−3
Sausages				
Total	11.9	11.7	8.1	−7
U.S.	9.7	10.1	6.9	−8
Live				
Total	202.2	160.7	67.0	−53
U.S.	201.6	160.1	66.5	−53
Total Exports	700.8	702.2	586.1	+11
% U.S.	79	82	78	+3
Imports Dressed				
Total	36.0	40.8	27.0	−22
U.S.	23.6	16.4	17.3	+56
Sausages				
Total	2.9	4.0	2.5	+24
Live				
Total	0.1	0.3	0.5	+188
Lard				
Total	7.9	4.5	1.6	−52
Total Imports	46.9	49.6	32.5	−14
% U.S.	74	51	70	

TABLE 4. CANADA: FOREIGN TRADE IN POULTRY AND SHEEP

	1984	1985	January 1 to October 1	
			1986	% year ago
Sheep Exports				
Lamb/Mutton (M.LB.)	0.1	0.2	0.1	−64
Live (000HD.)	15.1	19.2	18.5	+39
Total (Mil.$)	1.4	2.2	1.9	+19
Imports				
Lamb/Mutton (M.LB.)	19.9	24.2	23.3	+20
Live (000HD.)	53.3	38.4	29.5	−9
Total (Mil.$)	25.7	31.6	31.3	+30
Wool				
Exports (Mil.$)	2.3	2.0	1.4	−11
Imports (Mil.$)	33.7	36.8	32.8	+17
Poultry Exports[1]				
Meat (Mil.$)	24.8	22.3	16.9	+12
Eggs (Mil.$)	24.6	23.4	14.4	−18
Total (Mil.$)	49.4	45.7	31.3	−4
Poultry Imports[1]				
Meat (Mil.$)	83.8	74.6	59.5	+10
Eggs (Mil.$)	26.3	30.3	24.3	+12
Total (Mil.$)	110.1	104.9	83.9	+11

[1] Live and Product

TABLE 5. CANADA: TOP SIX AGRICULTURAL EXPORTS

	Exports			Imports	
	1984	1985	Rank	1984	1985
	Mil.$		No.	Mil.$	
Wheat	4 709	3 775	1	–	–
Rapeseed	883	797	2	–	–
Hogs & Pork	701	702	3	41	47
Cattle & Beef	429	454	4	328	324
Barley	636	319	5	–	–
Dairy Products	293	269	6	115	105
All Poultry	58	52		122	113

Source: Statistics Canada

TABLE 6. JAPAN: PORK IMPORTS[1]

						Jan. 1 to Oct. 1	
	1981	1982	1993	1984	1985	1986	% year ago
				000 T			
Denmark	72.4	18.9	17.7	75.1	77.4	55.8	−1
%	39	13	11	38	41	38	
Taiwan	19.7	19.7	33.1	50.7	67.8	56.4	+22
%	11	14	20	26	36	38	
Canada	42.6	43.6	41.8	29.6	22.0	18.9	+37
%	23	31	25	15	12	13	
USA	39.1	32.8	35.4	22.9	11.9	10.8	+48
%	21	23	21	12	6	7	
Others	9.8	26.2	38.3	17.3	11.1	5.6	−31
%	5	19	23	9	6	4	
Total	183.6	141.2	166.3	195.6	190.2	147.5	+12

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[1] Product Weight

TABLE 7. USA: FOREIGN TRADE IN LIVESTOCK & POULTRY (DRESSED = 000MT, LIVE = 000HEAD)

			%	Jan. 1 to Oct. 1	
	1984	1985	1985/84	1986	%
Pork					
Dressed exports	52.5	40.7	−22	13.8	−40
Dressed imports	355.7	423.8	+19	197.8	−13
Live exports	14.3	18.2	+27	7.2	−12
Live imports	1322	1226	−7	243.9	−75
Beef/Veal					
Dressed exports	111.5	109.5	−2	60.8	+14
Dressed imports	594.7	677.1	+14	324.3	+3
Live exports	71.4	124.7	+75	43.4	−32
Live imports	753.4	836.0	+11	641.4	+93
Mutton/Lamb					
Dressed exports	2.1	3.0	+42	1.3	+11
Dressed imports	8.7	15.6	+79	8.3	+23
Live exports	317.3	362.5	+14	83.7	−100
Live imports	16.3	24.3	+49	6.5	+119
Poultry Meat					
Dressed exports	230.1	231.9	+1	133.0	+23
Dressed imports	1.9	2.9	+53	.1	−7

Source: USDA

APPENDIX A. CANADA: COMPONENT VALUE OF LIVESTOCK AND POULTRY EXPORTS, 1970-1985 (MILLION $)

Year	Total red meats	Total live animals	Hides and leather	Tallow and lard	Poultry and eggs	Other products[1]	Total
1970	104.4	20.4	27.4	15.4	11.5	25.5	204.5
1971	104.0	19.7	24.3	19.0	11.0	23.1	201.1
1972	124.3	32.5	44.9	15.9	8.0	24.5	250.2
1973	184.7	86.9	63.2	24.2	17.5	33.6	410.1
1974	125.1	51.3	48.5	40.8	24.3	39.4	329.5
1975	144.1	52.3	55.0	32.8	19.8	38.7	342.8
1976	190.3	90.9	82.8	38.0	16.4	37.3	455.8
1977	201.8	114.3	105.3	55.6	23.2	38.0	538.2
1978	284.4	153.3	129.9	67.6	27.9	35.6	698.7
1979	388.3	168.3	175.9	96.0	26.8	37.7	893.0
1980	471.1	178.6	144.8	88.0	48.8	45.5	976.8
1981	579.0	156.4	136.4	89.3	61.3	48.4	1 070.7
1982	738.4	248.9	161.8	79.8	47.2	55.1	1 331.2
1983	670.3	245.4	161.3	71.8	45.0	49.6	1 243.4
1984	720.5	421.2	219.2	97.8	57.6	70.8	1 587.1
1985	797.5	375.0	198.1	92.9	52.0	57.5	1 573.2

[1] Wool, gelatin, rennet, sausage casings, bones & dried blood, glands, animal material used in drug manufacture, semen, animal oils & fats and glue

CANADA: DRESSED AND LIVE RED MEAT EXPORTS BY CLASS, 1970-1985 (MILLION $)

Year	Dressed beef & veal	Dressed pork	Dressed mutton & lamb	Other meats[1]	Live cattle & calves	Live hogs	Live sheep
1970	49.9	36.9	0.3	17.2	15.0	5.2	0.3
1971	48.1	42.0	0.1	13.7	14.6	4.8	0.3
1972	41.7	63.7	0.4	18.5	25.2	6.9	0.4
1973	59.3	96.9	0.2	28.3	75.4	11.1	0.5
1974	30.6	69.1	0.2	25.3	35.2	15.9	0.2
1975	18.8	98.2	0.1	27.0	47.7	4.4	0.2
1976	60.8	96.9	0.3	32.4	84.2	6.4	0.3
1977	55.4	118.5	0.1	27.8	107.9	6.0	0.4
1978	68.4	175.0	0.1	40.8	128.7	23.8	0.8
1979	109.6	225.9	0.3	52.6	148.3	19.2	0.8
1980	127.3	280.9	0.3	62.6	147.2	29.5	1.8
1981	146.3	357.9	1.5	73.4	132.5	23.5	0.4
1982	161.1	494.7	0.5	82.0	195.0	53.4	0.5
1983	153.5	435.1	0.4	81.3	173.3	71.6	0.5
1984	193.4	445.9	0.2	81.0	217.7	202.2	1.3
1985	221.8	489.7	0.3	85.7	212.5	160.7	1.8

[1] Offals, sausage and other meats and meat preparations. In 1985 Pork offal exports equaled $40.1 million, Beef offals $19.8 million

Source: Statistics Canada

APPENDIX B. CANADA: COMPONENT VALUE OF LIVESTOCK AND POULTRY IMPORTS, 1970-1985 (MILLION $)

Year	Total red meats	Total live animals	Hides and leather	Tallow and lard	Poultry and eggs	Other products[1]	Total
1970	116.1	14.3	35.0	4.6	16.2	34.6	220.8
1971	99.6	23.1	39.6	3.4	12.2	29.7	207.5
1972	153.5	25.2	57.5	3.7	17.4	36.8	294.2
1973	223.8	101.6	64.1	3.5	22.7	47.1	462.8
1974	186.6	56.0	75.8	13.8	27.8	52.5	412.4
1975	192.4	29.9	109.6	8.8	36.6	50.1	427.4
1976	335.4	66.4	119.2	8.3	69.0	56.0	654.2
1977	294.8	14.7	100.2	9.3	63.9	61.4	544.3
1978	331.2	38.9	126.3	12.0	65.7	70.9	645.0
1979	332.4	21.8	181.7	8.4	81.7	86.4	712.4
1980	287.0	60.4	116.0	6.1	72.8	87.4	629.7
1981	301.1	136.2	136.1	7.4	93.3	90.5	764.6
1982	296.6	72.4	113.8	9.1	81.0	75.0	647.8
1983	320.7	75.7	155.2	7.4	88.0	77.5	724.6
1984	378.7	38.6	176.9	12.2	121.8	84.9	813.2
1985	377.3	53.3	153.8	7.2	113.3	88.5	793.4

[1]/ ool, gelatin, rennet, sausage casings, animal grease, fats & oils

CANADA: DRESSED AND LIVE RED MEAT IMPORTS BY CLASS, 1970-1985 (MILLION $)

Year	Dressed beef & veal	Dressed pork	Dressed mutton & lamb	Other meats[1]	Live cattle & calves	Live hogs	Live sheep
1970	74.3	12.2	21.3	8.3	12.9	0.6	0.8
1971	69.4	8.1	14.6	7.5	22.0	0.1	0.9
1972	103.4	18.5	21.5	10.1	23.8	0.2	1.2
1973	146.4	32.8	29.5	15.1	99.3	0.2	2.1
1974	108.6	44.4	20.9	12.7	54.6	0.2	1.1
1975	80.7	84.6	16.5	10.7	27.3	0.2	2.4
1976	145.6	153.9	18.8	17.0	63.0	0.3	3.0
1977	100.7	159.1	19.2	15.9	12.3	0.2	2.2
1978	160.6	121.6	25.9	23.0	36.4	0.4	2.1
1979	196.1	72.3	41.1	22.9	19.9	0.4	1.6
1980	192.3	39.2	37.9	17.6	58.2	0.3	1.9
1981	195.6	48.8	31.2	25.6	133.1	0.4	2.7
1982	196.2	42.7	33.3	24.5	69.2	0.3	2.9
1983	209.5	47.7	37.9	25.6	71.6	0.3	3.8
1984	293.3	38.2	21.9	25.3	34.7	0.1	3.8
1985	274.0	42.4	28.3	32.6	49.8	0.3	3.3

[1] Offals, sausage and other meats and meat preparations not identified as to species

Source: Statistics Canada

FIGURE 1 EXPORTS OF LIVESTOCK AND POULTRY PRODUCTS 1970-1985

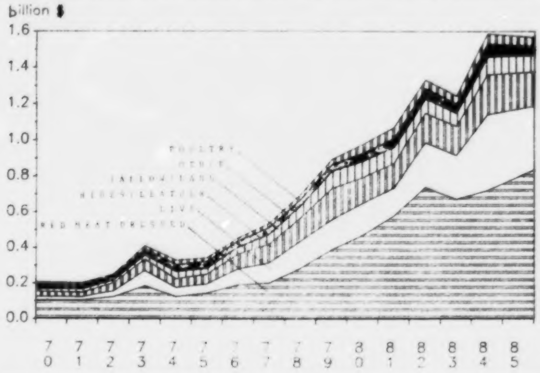
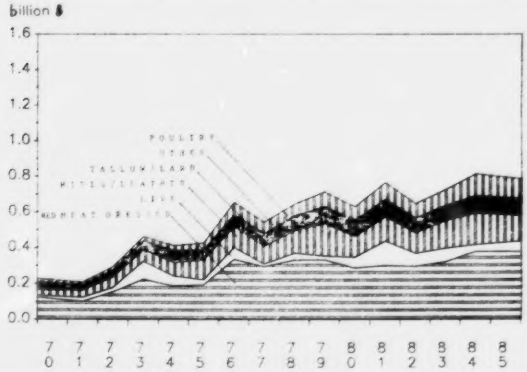


FIGURE 2 IMPORTS OF LIVESTOCK AND POULTRY PRODUCTS 1970-1985



The competitive position of the Canadian slaughter and processing industry

L.W. MacLeod

I appreciate the opportunity to talk with you for a few minutes this morning regarding a topic that is key to the success of the Canadian red meat industry, "The Competitive Position of the Canadian Slaughter and Processing Industry".

As you indicated, Mr. Chairman, this year, in addition to my regular job at Canada Packers, I was elected to preside over the Canadian Meat Council. The Council is the trade association for the Canadian meat packing industry. Its members are the Federally-inspected slaughtering and processing plants. Our 55 member companies operate 77 plants.

The meat packing industry which the Council represents, and of which my company is a part, is large and of considerable importance to the total economy. It is the country's largest food industry. With annual sales of over $8 billion, it ranks third largest of all manufacturing industries. It provides a cash market for $11 million of livestock daily. With a work force of over 31 000 people, it spends over three-quarters of a billion dollars on salaries and wages. As a non-metropolitan industry, operating in every province, what it pays its staff and what is pays for livestock quickly infuses into the rural economy of our country.

The industry generates over $1½ billion annually in "added value". It contributes over $30 million annually in income taxes. It supplies the daily red meat requirements of over 10 million pounds to Canadian consumers and ships another 2¼ million lb each day to export markets.

Meat processing represents all types of business organizations – Public, Private, Partnerships and Co-operatives.

We are very much a trading industry. Canadian farmers and ranchers are likely to continue to produce hogs and cattle in excess of our domestic needs. Indeed, with surplus supplies of feed grains, it is one of the few ways available to turn this grain into cash.

The business is a dynamic one which is rapidly changing. The slaughtering and processing sectors have gone through a substantial rationalization in the last decade. This has resulted in fewer older multi-storied plants. The rationalization is not yet complete as there are still too many old plants remaining.

The reasons for the reduction in numbers are many – just as there are many reasons for the reduction in numbers of livestock producers.

The newer plants are single storied and single species. They are much more cost efficient in terms of labor and maintenance. They provide a physical separation between the slaughter and processing operations. The greater bacterial control which this permits is essential: essential to shelf life; essential to export status and essential to reasonable costs of effective sanitation. The continuation of the rationalization process is very much a part of continuing to be competitive.

The profitability of the business in Canada and the U.S. has traditionally been moderate, with the *better* operated companies making a net after tax profit of about 1% of dollar sales. This means that, on average, the industry is only 1% away from breaking even.

This is an uncomfortable level of profitability and needless to say, leaves little room for the inefficient high-cost operator. On the other hand, it does keep the industry alert to new methods and innovations and weeds out the inefficient operators.

Obviously, there must be profits, or at least the enticement of potential profits, to attract the capital and the management talent the industry needs to maintain or enhance its competitive position.

The industry continually tries to monitor three things on an on-going basis:

(a) Our competitive position vs other Canadian competitors of which there are many. For instance, in the Province of Ontario, which has an average weekly cattle slaughter of only 17 000 head, there are no fewer than 27 federally-inspected slaughter plants plus at least 250 provincially inspected slaughter plants.

(b) We monitor our competitive position with plants south of the border. The importance of this cannot be overestimated when it is understood that plants located in the U.S. Mid-West can ship to Quebec and the Maritimes cheaper than plants located in Alberta.

(c) We monitor our competitive position with the EEC, particularly on pork, in that we compete in the U.S. and Japanese markets with pork from Denmark, which has some of the best pork plants in the world. In the past month, my company has had a group of people visit four European countries to make sure we are familiar with the latest slaughtering and processing technology in the pork area.

The topic I will attempt to address will, therefore, be our competitive position vis-a-vis world suppliers, primarily the U.S. I will attempt to do this in three segments: hog slaughter, beef slaughter, and processing. The Canadian hog-slaughtering industry has some excellent plants, strategically located across Canada. Many of these plants are equipped with the latest technology and many plants are looking at advanced technology not yet fully developed, such as robots which will work in hostile environments, management information systems and automated computer-controlled cutting rooms.

As I stated earlier, the industry still has some old, inefficient plants which will not survive.

Unfortunately, many of our plants are small and find it difficult to compete with large, world-class plants. This means there will be fewer small plants in the future. While I am sure there are some who will not be happy to see fewer plants, this trend is inevitable if the industry is to survive and be successful.

There are some big players getting into the hog-slaughtering business in the U.S. such as IBP, which is building new, large, efficient, strategically-located plants. If we are going to successfuly compete, we must have similar plants in this country.

If we cannot compete, then the live hogs will go south for slaughter in the U.S.

In the U.S., there are 72 plants, each slaughtering 100 000 or more hogs per year. These 72 plants, while only 5.5% of the 1310 federally-inspected hog-slaughter plants in the U.S., account for 88% of the total, commercial hog slaughter. Ten years ago, there were 116 such plants – so over one-third has closed in the decade but average slaughter per plant has gone up by 80% – from 11 000 head weekly to 20 000 head per week average in these large plants.

In comparison to those 72 plants, let's look at Canada.

There are 29 Canadian plants with a capacity of 100 000 head or more annually, averaging about 8700 head per week. A decade earlier we had 26 such plants with an average weekly hog slaughter of half the current level. With the average Canadian hog-slaughter levels well below those of our U.S. counterparts, there is still a very real challenge ahead in terms of obvious advantages the U.S. has in utilization of facilities, overhead and labor.

Before we leave hogs, let's look at where the major hog-slaughtering areas of both countries are located.

The Canadian beef-slaughtering industry, in spite of several plant closures in the last few years, has too many plants slaughtering too few cattle. Some of these plants are old and inefficient, and not particularly well located.

Our biggest competitor on butcher cattle is the U.S. where three large companies dominate the slaughter market. These companies, IBP, Excel and Val-Agri – have large strategically-located plants which are very efficient and have lower labor rates than most Canadian plants. By efficient, I mean highly productive in terms of amount of labor and overhead.

A *majority* of Canadian beef-slaughtering plants are single-purpose, modern facilities located close to where cattle are produced. Most of these plants have the latest technology but, because of size, they are not as efficient as the best U.S. plants.

Again, let's look at a map to better visualize locations. In the U.S., last year, 118 beef plants had a weekly slaughter rate of 1000 head or more – with an average weekly throughput of 5000 head. Incidentally, a decade earlier, there were 217 plants in this category with an average throughput of 2900 head per week. In comparison, Canadian plants, in the 1000 head plus category, number 20, and handle a weekly average of 2400 head – neither as great a reduction in plant numbers nor as large an increase in throughput over the decade as achieved in the U.S.

On average, U.S. labor rates are lower than Canadian labor rates after allowing for the difference in value of the dollar. This is concerning but this difference cannot be rectified in the short term. Our objective must be to gradually narrow this difference over a longer-term period.

While there are live cattle and hogs exported to the U.S., the trend does not appear to be a concern. Indeed, if there were no live cattle or hogs shipped across a relatively-free border, it would be surprising. Livestock prices are volatile. Producers and slaughterers are continually monitoring prices in both countries and, therefore, there are exports and imports, on both livestock and meats, every day of the week. This merely confirms the understanding that we are truly operating in a North American marketplace.

Our processing industry is one that has few disadvantages compared to our U.S. neighbours. Our plants are generally efficient. In most cases there is a considerable value-added component and there is considerable product differentiation and, most important of all, there are market niches.

I purposely have not dwelt at length on the labor component of our competitiveness. Labor represents from 7 to 10% of our sales dollar. Generally speaking, *and at today's exchange rates*, our wages in processing operations are in line with those in the U.S. Labor rates in Canadian hog- and cattle-slaughter plants are generally higher than in their U.S. counterparts. As I stated, this is a matter which must be corrected over the long haul.

Traditionally, Canadian labor rates were in line with contracts at the major U.S. plants. In both countries, packinghouse rates were the highest in the food industries of each country and were about the average for all manufacturing industries.

Then, in 1982 and 1983, there was a major change in the U.S. Average hourly rates in the U.S. peaked in 1983 and, last year, were 48¢ per hour lower for the meatpacking segment.

On the other hand, in Canada, our average wage has continued to increase. Considering this change between the relative labor rates of the two countries and the relative inflexibility of labor rates to change with exchange rate shifts, compared to livestock or meat, you can understand the industry's attention and anxiety to the labor cost component of competitiveness.

It will be obvious, from my previous comments, that the labor-rate discrepancy is greatest for the cattle-slaughtering plants, particularly in the West; somewhat less for hog-slaughtering plants and, perhaps, neutral to being in our favor in the case of processing plants.

Fringe benefits are also a factor. Here there are pluses and minuses. Canada has more paid holidays but lower employment security and accident compensation costs. The overall tax structure in the U.S. is lower than in Canada.

For a really true comparison one must be extremely careful to examine all the facts of plants that can be truly compared. As company management, we sit in a very difficult position – we want our plants to be sharply competitive with those in the U.S., but also we want our employees to be well rewarded for their service.

Earlier I mentioned market niches. I would like to spend a few minutes talking about quality and those market niches.

A term made popular in 1986 because of our free trade negotiations is that of a "level playing" field. A level playing field is probably as illusive as perfection. It is desirable and much-sought after, but rarely, if ever, achieved. It is a moving objective and if it were achieved, it would not remain constant.

The same objective, "a level playing field", is sought by the slaughtering and processing industry. I indicated to you earlier that we have some disadvantages with our U.S. competitors but we also have some advantages. If we exploit these advantages, we may well achieve a level playing field.

What are some of our advantages?

I have always believed the best way to be successful, in most things, is to deal in quality. In the hog and cattle industries, we have real quality advantages that we appear to forget or at least we fail, to a large extent, to focus on.

It is a well known fact Canadian hogs are leaner and more desirable than U.S. hogs. This is why U.S. slaughterers, on a regular basis, try to buy Canadian hogs.

This is why large quantities of Canadian pork are shipped to the U.S. every day at premium prices. Also, Canadian cutting and trimming standards – our workmanship – is superior. After all, our packing industry has over a century and a quarter of export tradition behind it. Our competitive edge is based on a superior carcass plus good care in processing.

To the end of October, Canada has exported over 345 000 000 pounds of pork to the U.S., which is an increase of about 10% over the previous year. I must stress, for the benefit of our U.S. friends, that this increase actually is below the pork plus live-hog equivalent of the previous year, when live market pig exports are also considered. Regardless, we do a very considerable business with the U.S. Put our pork shipments in typical trailers or containers and you would fill 200 of them every week. Much of this pork is shipped to processors or supermarkets who are willing to pay a premium for leaner, top-quality pork.

Obviously, the Canadian pig and pork industry knows a little bit about being competitive. Shipments to Japan for the same period were in excess of 41 000 000 lb for an increase of about 17%. Our share of the Japanese market is not as high as it once was but I would suggest that it is due to the playing field not being level, mainly on price. The Japanese, who are very quality conscious, have a very high regard for Canadian pork and recognize its quality.

To fully exploit the Japanese pork market, we are going to have to find ways and means to get fresh pork, not frozen pork, delivered to Japan, as this is the way they want it. Taiwan has become a large supplier of fresh pork to Japan. We are presently investigating ways and means to get our pork to Japan in a fresh, rather than a frozen, condition, and I am confident this challenge will be met. If we do not find the answer, another country will, and steal the market from us.

Canadian beef is much leaner than U.S. beef. Overfat beef was recognized by the Canadian industry as a problem about 20 years ago. Fifteen years ago, new grading regulations were implemented which effectively penalized producers of heavy-fat cattle. Consequently, for the last decade, our beef has been considerably leaner than U.S. beef which meets the desire of consumers. Unfortunately, until relatively recent times, we have not exploited this fact and, unfortunately, many consumers and, indeed, some supermarkets, are not yet aware of this situation.

The Canadian and, indeed, North American beef industries, have been under attack with many unfounded charges being levied against them.

We have been far too slow to react. To tell our story. Fortunately, we have a good story to tell based on researched facts and we are finally fighting back. We need to do more. The Beef Information Centre, Meat Month and our Council's Meat the Good News programs are a start.

We have superior quality products in both beef and pork. We must take advantage of this quality to carve out more premium markets in the U.S. This will help offset some of the disadvantages I mentioned earlier. I think most Canadian packers, as well as exporters of live cattle and hogs, are willingly contributing to the U.S. Promotion and Research Check-Offs which commenced recently.

A start has been made in marketing Brand-Name fresh meat products in Canada as well as in the United States. There are several products already on the market but the opportunities in this area are unlimited on both the domestic and export markets.

Consumers are looking for new products, attractively packaged, which can be microwave-cooked and, above all, which are of good value. This is an area that several processors are presently investigating and which will be exploited in the next 18 months. It takes time, money and imagination to develop new products. The risk is substantial but the pay-off can be attractive. If we, in our industry, are not in the forefront of developments, even our domestic market will yield to U.S. product.

I have sufficient faith in our Canadian industry to believe that, before this time next year, several new products will be on the market which will not only capture the attention of Canadian consumers, but, also that of U.S. consumers. If we are good enough in this area, it will help create a level playing field.

To sum up, we have some disadvantages in two areas, size and labor cost. But we have a competitive advantage in flexibility and location. We have definite advantages in quality and we can, with ingenuity and imagination, have advantages in value-added products which, in my opinion, result in a reasonably-level playing field.

The industry still has to go through some rationalization, but, that is necessary, however painful it may be, in order to remain competitive and viable. My earnest plea is that, in spite of the inevitable pressures on it to prop up affected plants, governments will let the process happen.

The history of the Canadian red meat industry, whether livestock producers or meat packers, is one of trade and open borders. The industry has demonstrated it can slug it out in the international marketplace and carve out a place for itself. Through depression, war, drought, disease, Smoot-Hawley tariffs, currency crises, the export orientation and the ability to adjust have persisted.

So I say, there is a will to be competitive. The Canadian Pork Council and the Canadian Cattlemen's Association have said so! The record and the intent of our Council are clearly positive. That is why we are so supportive of the Free Trade discussions.

This determination is surely our greatest asset in ensuring that the slaughtering and processing industry will, in fact, continue to hold a very scrappy, competitive position in the world's meat economy.

TABLE 1. U.S. HOG SLAUGHTER PLANTS (OVER 100 000 HEAD/YR OR 2000 HEAD/WEEK)

	1976	1985	% Change
Number	116	72	-38
Avg. wkly slaughter	11 000	20 000	+82
% of U.S. total slaughter	85	88	
Total commercial slaughter	78.7 mil	84.5 mil	+7

TABLE 2. CANADIAN HOG SLAUGHTER PLANTS (OVER 100 000 HEAD/YR OR 2000 HEAD/WEEK)

	1976	1985	% Change
Number	26	29	+12
Avg. wkly. slaughter	4400	8700	+99
% of federally-inspected slaughter	79	96	
Federally-inspected slaughter	7.5 mil	13.7 mil	+82

TABLE 3. U.S. CATTLE SLAUGHTER PLANTS (OVER 50 000 HEAD/YR OR 1000 HEAD/WEEK)

	1976	1985	% Change
No. plants	217	118	-46
Avg. weekly kill	2900	5000	+75
% of U.S. slaughter	76	84	
Total slaughter	42.7 mil	36.3 mil	-15

TABLE 4. CANADIAN CATTLE SLAUGHTER PLANTS (OVER 50 000 HEAD/YR OR 1000 HEAD/WEEK)

	1976	1985	% Change
No. plants	29	20	-31
Avg. weekly kill	1900	2400	+21
% of Canadian federally- insp. slaug.	79	77	
Total fed.-inspect. slaug.	3.7 mil	3.2 mil	-13

TABLE 5. CANADIAN LIVESTOCK & MEAT TRADE WITH U.S. (10 MONTHS 1986)

	Imports	Exports
	(000/hd)	
Livestock		
Cattle & calves slaughter	39 351	158 710
feeder	5 071	4 352
Swine	–	352 443
Meat (million/lb)		
Beef & veal	32	144
Pork & processed pork	10	345

TABLE 6. AVERAGE HOURLY EARNINGS (HOME CURRENCY)

	1965	1975	1980	1983	1984	1985
Meatpacking						
Can.	2.26	5.82	7.67	10.88	11.37	11.22
U.S.	2.99	5.67	8.49	8.58	8.17	8.10
Meat Processing U.S.	2.78	5.36	8.06	9.07	8.89	8.72

FIGURE 1. MAJOR U.S. HOG SLAUGHTER REGIONS

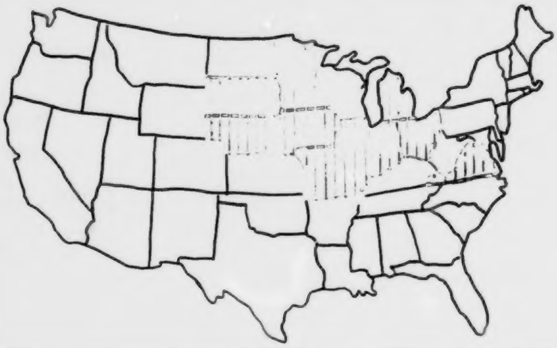


FIGURE 2. MAJOR CANADIAN HOG SLAUGHTER REGIONS

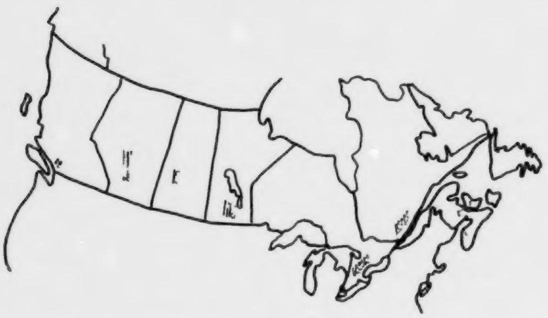


FIGURE 3. MAJOR U.S. CATTLE SLAUGHTER REGIONS

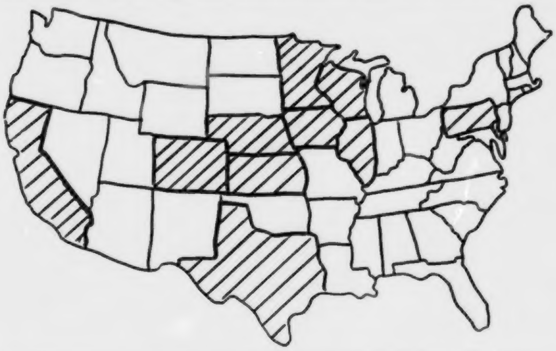


FIGURE 4. MAJOR CANADIAN CATTLE SLAUGHTER REGIONS

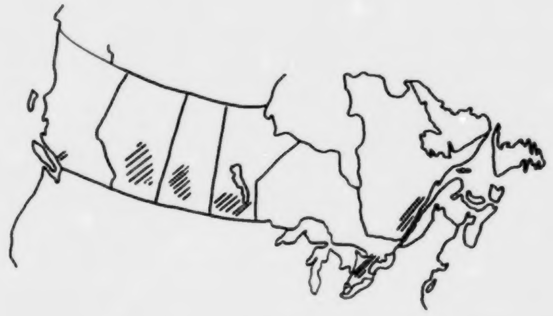
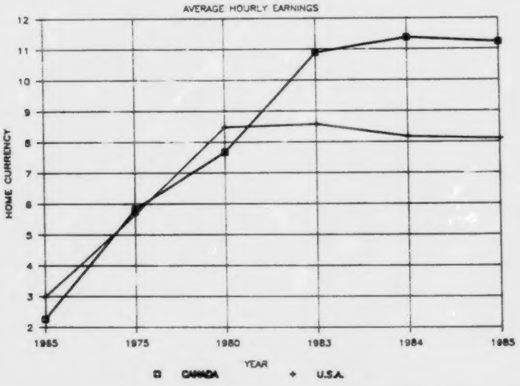


FIGURE 5. MEAT PACKING INDUSTRY (AVERAGE HOURLY EARNINGS)



Competitive position of Canada's meat industry: meat merchandising

Guy Massé

It was with pleasure and pride that I accepted Assistant Deputy Minister Frank Claydon's invitation to participate in this Canadian Agricultural Outlook Conference. It is always with interest that Steinberg participates in this type of event. It gives us an opportunity to meet with representatives of all sectors of the meat industry in Canada.

During my presentation, I will address three issues related to the competitive situation of the Canadian meat industry with a focus on the merchandising of beef, veal, pork and poultry. The three issues are:

- recent and future consumer trends;
- opportunities and major constraints with regard to meat marketing;
- current and future merchandising technologies to improve competitiveness.

RECENT AND FUTURE CONSUMER TRENDS

No effective marketing strategy can disregard the profound changes our society has been undergoing with respect to lifestyles and consumption habits. A multiplicity of factors are constantly influencing such habits and it is only by understanding the dynamics of these factors that it will be possible to meet consumer needs. These factors are, for instance:

- The rapid increase in the number of middle-aged and elderly people.
- The smaller family unit which constitutes no less than half of all households, making for a reduction of the average food order, and a trend towards smaller, more frequent purchases.
- The increasing number of women in the work force entailing a major shift in shopping hours, an increase in the number of meals eaten outside the home, and further fragmentation of the weekly food order. In fact, meals eaten at home do not amount to more than 30% of the total number of weekly meals.
- The rising level of education and the surge of two-income households create a more demanding consumer who is more open to new products, new services and new ideas.

Consequently, the traditional middle class of the fifties, sixties and seventies has evolved into an array of sub-groups with a diversity of attitudes, tastes and preferences. Lifestyles of today's consumer reflects new values often associated with health, nutrition, fitness or simply the search for new food experiences. Consumers are more demanding, more sophisticated in tastes and habits to the extent that they will attach more importance to the notions of value and quality rather than price.

Future trends

The trends just described are clearly going to increase over the next few years and one of the most important is certainly the aging of the population.

In fact, before the next decade, the 35 and under age group will decrease by 7% and the 50 years of age plus group will increase by almost 10%. By 2006, in less than 20 years, an increase of 25% in the 65 years of age and over group is forecasted.

The modern technology trend will augment means of making life easier and devoting less time to household tasks, such as meal preparation. Even today, women who are at home spend less and less time preparing meals. Furthermore, the number of Canadian homes with a microwave oven will double in the next five years.

Fifty-seven percent of young women are expected to be on the job market in 1995 while, at the same time, the baby boomer generation will have attained its maximum purchasing power. Since this segment of the population, which is more educated and more sophisticated, will be relatively well off, we can predict that the demand for more refined or gourmet type food products will continue to increase substantially. In addition, microwave cooking will be the norm.

Lastly, tomorrow's consumer will have access to advanced electronic technology which will fundamentally alter all retailing sales principles. There are already a few examples of this today; electronic purchasing, automatic debit cards and banking machines. In fact, we are limited only by our imagination in this area.

MEAT MARKETING OPPORTUNITIES AND CONSTRAINTS

Aware of the importance for a distributor to adapt and, in many instances, anticipate consumer needs, we, at Steinberg, have been working to find innovative solutions that will allow us to take advantage of the many new business opportunities.

In 1984, we implemented a vast program to better adapt our marketing strategies to consumer needs. By modifying prime cuts, it was possible for us to improve the variety of our retail cuts, offer every size of roast and provide steaks of varying thicknesses. We improved the variety and quality of our product presentation and cut losses in our stores.

In our supermarket boutique type counters with personalized service we offer customers special cuts called "Chef's Cuts". These cuts represent a new choice, meeting the more sophisticated tastes of customers.

To better illustrate our strategy, here are a few examples.

Beef

Fifteen of the 26 prime cuts produced by our processing plants are boneless prime cuts.

For instance, the sirloin cut, traditionally sold with the bone, was modified so we could offer smaller boneless portion control roasts and steaks.

The sirloin tip cut which, in the past, produced conventional sirloin tip roasts and steaks, underwent a major transformation when we concentrated on the muscle to create the sirloin tip eye roast of the steak center cut.

In addition, we changed our cross rib retail cuts to offer customers a leaner, boneless product. As a result, we can prepare smaller boneless cross rib roasts and steaks.

Our new product strategy is best reflected in our transition toward boneless cuts which now account for more than 65% of total beef sales. In spite of a major drop in the consumption of beef over the past few years, we worked hard at offering customers a product that better meets their needs. This initiative resulted in a 6% volume increase in beef sales for our supermarkets.

Veal

Insofar as veal is concerned, it represents an opportunity for retailers to offer customers an interesting alternative. For too long, retailers have had a tendency to focus efforts exclusively on conventional cuts.

Veal is leaner and better suits the needs of customers seeking nutritionally sound eating habits, while being able to vary their weekly menu.

Thanks to a concerted effort with producers and processors, we have developed completely boneless, heavy milk veal prime cuts and a wider array of retail boneless cuts. We offer customers smaller boneless roasts and veal scallopinis. In spite of its higher price, we increased our supermarket veal sales by 500% in our supermarkets during the last year.

Pork

In terms of innovation over the past few years, despite its popularity, pork has been neglected. In general, the pork industry has suffered as far as the marketing of smaller and leaner boneless cuts are concerned.

We will have to work soon at offering consumers pork products that meet their expectations. We should emulate the American example and diversify retail cuts. Through the use of avant-garde techniques, the Americans have succeeded in marketing quality packaged retail pork products ensuring a longer shelf life and allowing direct microwave usage.

We attempted an experiment with the leg of pork which was traditionally sliced in two with the bone left in. We modified this cut to offer steaks, scallopinis and inside and outside tip roasts while allowing for smaller and leaner boneless cuts. On a weekly basis, we now sell five to six times more legs of pork, which encourages us to pursue efforts to modify other cuts and respond to definite customer interest.

Our Meat Processing facility, Trillium Meats, prepares counter-ready pork and poultry cuts for retail sale.

Poultry

Of all the fresh meat industries, the poultry industry has certainly been the one that has contributed the most toward making the consumer aware of healthy eating habits. It has been quick and effective in adapting to the new consumer trends. It diversified its products rapidly by offering, for example, boneless breasts and chicken nuggets.

To offset the drop in consumption of whole turkeys, the industry offers turkey cuts, scallopinis, boneless breasts and breasts with bone in, skinless or not. In addition, an array of small, frozen, boneless roasts is now available.

The poultry industry has adopted modern packaging methods whereby ice has been replaced with the Controlled Atmosphere Product process (CAP) which makes it possible to keep the product longer and allows for more sanitary handling.

Concerning the marketing and merchandising of fresh meats, a key factor for success is the importance consumers attach to the concept of convenience. The importance of convenience is truly a factor for success in today's marketing and merchandising of fresh meats.

Convenience for consumers can lies in a product that better meets most of their expectations, a product that is leaner, smaller, boneless and that is easy and quick to prepare.

In addition, our own marketing approach improves customer convenience by including recipes in our circulars and suggesting weekly menus. We have recently associated ourselves with well-known master chef, Pol Martin, to publish recipes in our circulars and give cooking tips in our supermarkets.

Finally, 60 of our supermarkets have been renovated, with 35 more planned for this fiscal year. Our concept "Le Supermarché" offers the services and atmosphere the consumer is seeking. We have placed more emphasis on the specialized boutique type of approach with personalized service in meats. We have extended this concept as well to fish, seafood, delicatessen and cheese product areas.

Ladies and gentlemen, in concluding, I believe that producers, packing houses, processors, retailers and government marketing agencies must truly rally around this concept of convenience.

The quality of our domestic herds is recognized worldwide. I do not wish to start a controversial discussion but I would like to draw your attention to the American and European experience in which the fresh meat industry is definitely ahead of us, particularly with regard to product processing and packaging and conservation techniques such as ozone. Our North American neighbors have also developed product lines which are microwavable, pre-cooked and in some cases ready-to-eat.

We still need to develop national consumer information programs on the nutritional value of fresh meats, as opposed to the creation of individual programs which are sometimes incomplete. Awareness programs will have to be created with industry and government to inform the public and demystify certain consumer fears with regard to certain meats. Conservation is now fashionable. Our industry will have to follow the lead of the world industry.

Rallying together can only benefit the whole industry, from the producer to the retailer, since we should be able to achieve substantial time, handling, shipping and packaging savings. But better yet, we will offer today's and tomorrow's consumers quality products that meet their needs. This is our real challenge.

GRAINS AND OILSEEDS SESSION

Changes in the U.S. Farm Bill

Brian W. Paddock

Any discussion of short and medium term outlook would be incomplete if it does not take account of the recent changes in U.S. Agricultural Policy. My task is to describe some of the more fundamental changes in the Farm Bill or the Food Security Act as it is officially known and to discuss the impacts such changes could have on U.S. and ultimately world grain markets. The speakers who follow me will be analysing the impacts on particular commodities in more detail.

Two of the most important instruments in the Farm Bill are the commodity loan program and the target price program. Together these two programs provide U.S. farmers with a minimum price guarantee.

U.S. COMMODITY LOAN PROGRAM

U.S. wheat and feed grain producers who participate in farm programs can obtain loans from government using grain in storage as collateral. The amount of loan a producer can obtain per unit of commodity is known as the loan rate. In some respects these loans are similar to those available to Canadian producers under the prairie grain advance payments program and the advance payments for crops program.

A key difference is that at the end of the 9 month term of the loan, U.S. producers have the option of either repaying the loan or forefeiting the grain to the government. The minimum price at which the government can resell the grain varies by type of grain but, with the exception of soybeans, is significantly higher than the loan rate. Thus, at prices at or below the loan rate, grain defaulted to the CCC is not available to the market. A producer will have no incentive to repay his loan if the market price is below the loan rate. Grain will be defaulted to the CCC until enough is isolated from the market to force the market price to the level of the loan rate. Thus, if sufficient grain is eligible for commodity loans, the loan rate functions as a floor for the market price.

This effect is similar to that of Canadian Wheat Board (CWB) initial prices on off-board prices. When there are ample delivery quotas, a producer has no incentive to accept an off-board price lower than the CWB initial price. Therefore the off-board will have to bid at the CWB initial price level or above to induce the producer to forego the opportunity to deliver to the CWB.

TARGET PRICE PROGRAM

Participants in wheat and feed grain programs also receive deficiency payments if the market price is below the "target price". The deficiency payment is equal to the difference between the target price and the greater of the market price or the loan rate. Thus the participating producer is guaranteed the target price through the loan rate and deficiency payments. Deficiency payments are payable on total production which is determined on the basis of documented acreage and historical or "program yields".

Figure 1 illustrates the determination of deficiency payment levels under two different market price scenarios. In the first scenario, the market price is above the loan rate; accordingly, the deficiency payment is equal to the difference between the target price and the market price. In the second scenario, the market price is below the loan rate and the deficiency payment in this case is equal to the difference between the target price and the loan rate.

Loan rates were reduced by about 25% for 1986-87 and can be reduced a further 5% if the market price is less than 110% of loan rate in the previous year. Target prices were frozen through 1987-88 after which they can be reduced by a maximum of 2%, 3% and 5% beginning in 1988-89. Thus, market support provided by the loan rate will be reduced while prices to producers will be maintained by increased deficiency payments.

Figure 2 illustrates the trend in potential deficiency payments (the difference between the target price and the loan rate). Given the large increasing potential deficiency payments, producers are expected to find program participation very attractive. Consequently participation is expected to be high; in 1987 it is likely to be between 80 and 85%.

GRAMM-RUDMAN-HOLLINGS LEGISLATION

In order to satisfy the requirements of the Gramm-Hudmann-Hollings (GLH) legislation, all payments to producers are being reduced by 4.3% in 1986/87. This reduces even further the market price support provided by commodity loans.

LAND DIVERSIONS

To participate in a commodity program, producers may be required to participate in an acreage set-aside; that is, to divert a proportion of their historical plantings to that commodity to conserving uses. In addition participants may be offered the option of diverting additional land in return for additional payments. This is known as a paid diversion.

The producer's decision whether or not to participate will normally be determined by whether net returns are greater for participating in the program. Figure 3 illustrates this tradeoff. For the non-participating producer, net revenue is equal to the sum of "B" and "C". To participate the producer sets aside land, foregoing net revenue equal to "C". In return, he gains net revenue equal to "A" (deficiency payments). The producer is likely to participate if "A" is greater than "C".

To participate in the 1987 program feed grain producers are required to set aside 20% of their historical planting base and can divert 15% in return for additional payments. Participation in the 1987 wheat program requires a set aside of 27.5%. No paid diversion has yet been announced for wheat.

GENERIC CERTIFICATES

The 1985 Farm Bill allows the U.S. government to pay up to 50% of advance deficiency payments and all of land diversion and final deficiency payments using certificates which may be exchanged for a government-owned commodity. This has the effect of reducing both the budgetary cost of making such payments and the costs of storing such grain. Payments using such certificates also have the effect of reducing the effectiveness of the loan rate in supporting the market price since this grain is not eligible for government loans and therefore will be put on the market.

Certificates with a total value of up to $10 billion could be issued in 1986-87. To date corn and wheat have about equally shared the bulk of certificate redemptions with a small quantity coming from stocks of other commodities.

EXPORT ENHANCEMENT PROGRAM

USDA is obligated to offer bonuses totalling 1.0 to 1.5 billion dollars in the form of government owned commodity to companies exporting to targeted destinations where U.S. exports are deemed to have been damaged by foreign subsidies. This has lowered the effective price of U.S. commodity and has forced competing exporters to lower their prices accordingly or lose market share.

The list of targeted countries has tended to increase. The prospect that their country might be targeted in the future has caused importers to delay purchases, which has in turn put more pressure on market prices.

Bonuses have recently been running at $30-$35/tonne for wheat. To date, about 30% of U.S. wheat sales have involved such bonuses. An additional 5.5 million tonnes of offers have been made but not yet accepted.

SOYBEANS

Like wheat and feed grains, soybeans are eligible for commodity loans. However, there is no target price for soybeans, there are no land diversions required from soybean production. However, in some cases soybean producers growing other crops for which land set-asides are required may be required to comply with the set-aside requirements for these other crops in order to qualify for soybean loans. This is known as cross compliance. In 1986 and 1987, there are no requirements for cross compliance.

CONSERVATION RESERVE

The 1985 Farm Bill put into place a "conservation reserve" by which USDA must divert to conservation uses 40-45 million acres by

1990. Reserve contracts are for 10 years. In 1986 3.7 million acres were entered into the reserve. In 1987 the reserve is expected to reach 13 million acres.

Should the reserve reach 40 million acres, it would represent 12% of U.S. grain and oilseed acreage (planted and diverted) in 1985. While the land will be of less than average productivity, a reserve of 40 million acres could have a significant impact on U.S. grain and oilseed production.

CONCLUSION

World grain markets will be heavily influenced by policy instruments contained in the U.S. Farm Bill. In the short term U.S. efforts to reduce government owned stock levels will maintain downward pressure on world grain markets while protecting U.S. farmers with cash and commodity payments. In the longer term, programs to reduce U.S. production hold the potential of bringing U.S. supplies under control thereby providing some relief to prices.

FIGURE 1. TRENDS IN POTENTIAL WHEAT DEFICIENCY PAYMENTS

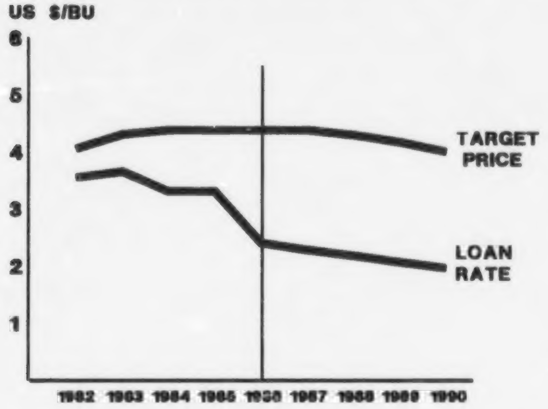


FIGURE 2. DEFICIENCY PAYMENT DETERMINATION

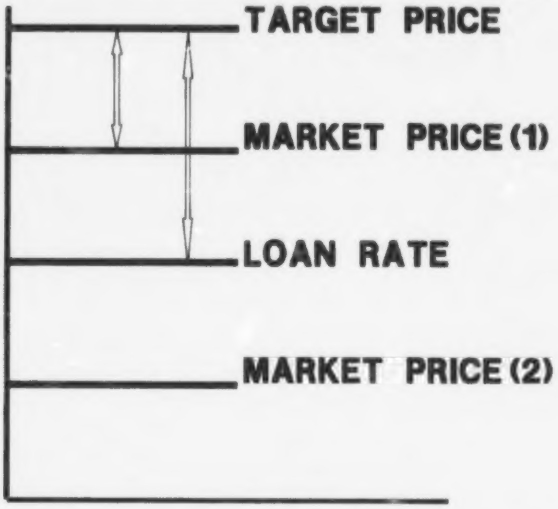
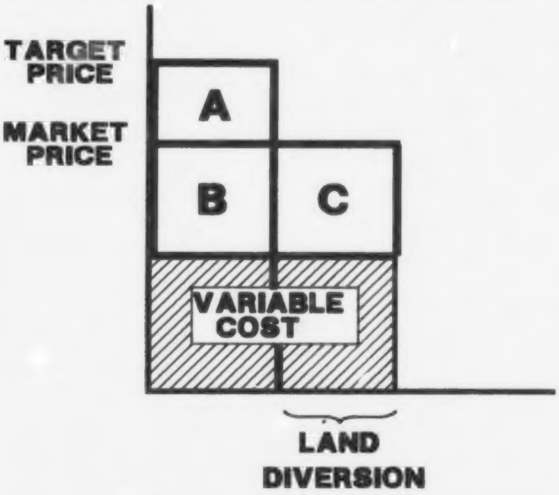

TARGET PRICE
MARKET PRICE (1)
LOAN RATE
MARKET PRICE (2)

FIGURE 3. NET REVENUE COMPARISON: PARTICIPANT VS. NON-PARTICIPANT


TARGET PRICE
MARKET PRICE
A
B
C
VARIABLE COST
LAND DIVERSION

Considerations in licensing new wheat varieties

A.A. Guitard

I have two versions of what I should discuss - "considerations in licensing new wheat varieties" and "factors to be considered in deciding whether new classes of wheat should be licensed for production in Canada". At the policy level these are similar considerations relating to the maintenance of the present system of class and variety within class. The question is - what should we do to meet new market requirements for wheat and to accommodate new genetic creations that appear to have merit? Should we continue our present structured approach to production and marketing or should we abandon it? What are the considerations?

My thoughts are conditioned by work with the Committee commissioned by the Hon. Charles Mayer to look at the production of unprescribed (unlicensed) varieties of cereals and oilseeds in Canada and to recommend solutions for present or potential problems caused by the production. Ken Beswick, Archie McPhail, George Siemens, Brian Oleson and I found that the only problem was with spring wheat. The problem was the production in 1985 of 18 unprescribed varieties on 500 000 acres of land in western Canada, mostly Manitoba. They were high-yielding semi-dwarf varieties developed in the United States. They are not eligible for licensing in Canada because they have different milling and baking quality than the Canadian Western Red Spring (CWRS) class and cannot be visually distinguished on the basis of kernel characteristics.

There were only three possible solutions - the first was to modify the quality requirements of the CWRS class so that would accept the best of the U.S. semi-dwarfs - the second was to learn to live with the mixing of the two quality types - the third was to stop production of the unprescribed varieties. The first option would weaken Canada's position in international wheat markets. The second option is essentially an abandonment of the licensing system. The third option curtails the production of some producers.

The whole problem seemed to centre around Canada's system of licensing. The legislation that created the system of licensing varieties for specific use was enacted in 1923. It is in force today with only minor revision. For the CWRS class of spring wheat, eligibility for licensing requires a specific kernel type, milling and baking quality equal to Marquis and improved agronomic performance for a defined area of production. The uniformity of the product created by this system forms the basis for single-desk selling and the certificate final.

It was the unanimous opinion of the Committee that reducing the quality standards for the CWRS class or abandoning the licensing system either by legislation or non-enforcement would soon destroy the Canadian production and marketing structure for the CWRS class of wheat. The net result would be loss of returns to producers. The increase in yield by the production of U.S. semi-dwarfs would not compensate for the loss of value in the marketplace.

On the other hand, using the licensing system to support a single-minded adherence to the quality standards of the CWRS class of wheat had been largely responsible for creating the problem of extensive production of unprescribed varieties. Because of the strong negative association between yield and percentage protein, the requirement of the CWRS class for high percentage protein placed a genetic ceiling on yield. Production of the higher-yielding, lower-protein U.S. semi-dwarfs was essentially an expression of dissatisfaction with the situation.

Partially in response to the situation, an additional class of spring wheat had been created in 1985 to accommodate the higher-yielding, lower-protein varieties of red spring as well as possible varieties of white spring wheat. This Canadian Prairie Spring (CPS) class of wheat has the potential to give the producers the high-yielding option that they require and in doing this will protect the high-quality option embodies in the CWRS class. However, it is only a potential not a reality.

It is not a reality because there is only one variety licensed in the class and no established markets. The class specifies kernels that are visually distinguishable from those of varieties in the CWRS class so few of the United States varieties can be licensed in the CPS class. Commercial development requires the licensing of several adapted varieties to give the class substance. Development of the class also required the creation of markets. This development is essential if the production of unprescribed varieties is to be stopped in a way that will leave producers with the high-yield spring wheat production option.

I have discussed the situation with regard to the production of unprescribed U.S. semi-dwarfs in considerable detail. I have done this because it embodies the essential policy consideration relating to the development of classes and varieties of wheat (or other cereals and oilseeds). Essentially, the problem was caused by delay in creating a class to accommodate the high-yield option. This led to considerations of modifying the quality standards of the CWRS class, abandoning the licensing system, replacing visual distinguishability with a black-box approach to identification and similar changes in the system. The problems that we have now or may have in the future cannot be solved by destroying what we have but only by timely building on our present system. This must be the basis for considering the development of new classes and varieties. These are policy considerations.

There are also operating considerations that are important to the effectiveness of the system. I would like to give two as examples.

The first is the matter of obsolescence. We tend to add new classes and varieties but not to give serious consideration to removal of those that are no longer useful. This can restrict new addition such as the CPS class which in kernel type is boxed in the CWRS, Amber Durum, Soft White Spring and the Utility wheat classes. Breeders argue, with some justification, that this will restrict the level of yield attainable in the class. Because the Canadian Utility class is used for only two varieties, there would appear to be reason to consider removing it to provide a broader kernel-type base for the CPS class.

The second operating consideration relates to the structuring of a new class. When it is first formed it is essentially a skeleton. It requires varieties to add substance. With the new CPS class there is only one licensed variety – and it is not typical of the class. As more varieties are licensed the class will take form and may change appreciably. It must be allowed to do this. One of the most obvious quality changes could be to be less tolerant of the reduced water adsorption now associated with the semi-dwarf characteristic. Other changes will require consideration as the class develops. There will be similar considerations for other classes.

I could continue, going into greater and greater detail. However, it would not serve any real purpose to do so. I hope that these examples will indicate to you the types of considerations that I believe are necessary when developing classes and varieties of wheat.

Licensing new wheat varieties: A producer viewpoint

S. Gordon

It is with some interest that I address this topic today. The debate over new varieties of wheat has been vigorous to say the least, especially in Manitoba. Hopefully the views I present to you today will shed some light on the factors as I see them in determining whether or not a new variety of wheat should be licensed.

Any development of a new class of wheat and all the varieties to fill it has to be based on two things: a changing market demand for a present class of wheat or on emerging demand for a new class which we do not have at the present. This question really revolves around the development of a 3M category of wheat to compete in what has been up to now the most rapidly increasing market in the world. We have been sellers to that market, however, sellers really only to the extent that there was enought 3CW wheat to offer. Years when grade patterns produce mainly #1 and #2 wheat meant we were effectively out of that market. Any market development has to operate around two principles: market acceptability of the product and a consistent adequate supply. You cannot operate a class of wheat around the function of grade patterns. The creation of the new CPS class will eventually develop to the point where both of the above principles are satisfied. The question asked "what are the main factors in developing new varieties" brings on automatic review of the present varietal licensing system; is it doing the job for my farm, should it be changed and if so what would I recommend?

Briefly, I would like to comment on the function of the three expert committees and the criteria used by them.

For purpose of discussion I will treat the expert committee on plant breeding and plant diseases as one in that they measure the agronomic performance of new plant material, e.g. yield performance, days to maturity, lodging, shatter resistance, dormancy, etc. and then the plant disease committee looks at how the material performs against the normal pathogens it will meet at field level.

The present testing procedure is rigorous, closely monitored through several test levels and usually results in plants that perform, in most cases, better than the ones they eventually replace. Unfortunately the process is extremely expensive and time consuming (up to 12 years). Any new class of wheat implies new varieties to supply it and some would suggest condensing the above process to make it less costly and speed up licensing. As a producer who has grown unlicensed varieties that have not gone through our testing system I would be very cautious. I have seen too much variation on our own farm to believe that a couple of years of trial data are adequate to measure plant response against average prairie conditions. This brings me to the most contentious area in dealing with factors surrounding the issue of new varieties. The expert committee on quality is intimately involved here with input from the milling, marketing and handling segments of the grain industry. At this point I would like to add myself, as a producer, to that committee and give them my viewpoint.

1) Is there a market for a new class, with the world market characterized by huge supplies of 3M wheat and a shrinking world trade, i.e. 101 Mt in 1981-82 to a projected 87 Mt in 1986-87, a drop of 14%?
2) Would the development of a new class of wheat jeopardize existing markets?
3) Is it desirable, with a scarce research dollar to invest it in developing new varieties for a class of wheat with a market potential limited by the factors illustrated in point 1)?

As a producer I realize that the long term prosperity of my farm depends on having the right product for the right market. At this point (in terms of the 3M market) we have neither; however the long term nature of varietal development necessitates a beginning even if the future is uncertain. I do not subscribe to the current popular theory that we are in a permanent state of oversupply. The huge production leaps of some countries cannot be sustained in such a linear fashion as many economists project. When the demand side catches up, as it will, I want to be in a position to capitalize on every market available, be they for wheats of different classes than our current ones. It is my belief that the subsidy wars currently raging will abate as scarce economic resources are reallocated to more naturally efficient areas within those countries. This will in turn allow the comparative advantages of a country such as Canada to bring full economic returns from the international market place with zonal adaptation of production in Canada for those markets.

In answer to the question: would the development of a new class of wheat and its varieties jeopardize existing markets? With over 80% of my farm's net income and cash-flow depending on my present markets I would be very averse to anything that would threaten the present markets I depend on. Fortunately our system has the safeguards within it to deliver new varieties that would fill the needs of a new wheat class without any danger of changing the marketability of our present classes. The problem is that the safeguards often place significant restraints on the plant breeders trying to develop new varieties that may fit any new class of wheat. The two main problems most often talked about are visual distinguishability and protein. The area of visual distinguishability creates the greatest problem and is the one I would like to address. I believe it can be worked around. What is required is the commitment to develop the technical means to identify wheat. This type of research is already under way and should be fully supported right across the industry. If we truly believe that a practical technical identification process is within our grasp then we should allow our plant breeders to continue to develop any variety which promises to make a significant contribution to a new class of wheat with the following caveat: even if we have to shelve the new product until the technical identification process catches up, it will end up being there to bring on stream as we need it. As a producer I would support that approach, knowing that if I wait for the completion on one area of research before I begin the other, that I will have lost valuable lead time, lead time that other competing countries will be quite happy to take and turn against me in years to come.

At this point I would like to comment on the present class of RSW we have and how it should be used to help model any new emerging class and varieties. By lock or design, in this class of wheat we have the right quality of product for the right market. In a world characterized by a huge oversupply of medium quality wheat, saleable in many cases only under highly subsidized terms, we remain a commercial seller, selling to mostly cash customers at, if not premium prices, at least on a most preferred basis due to the quality of the product we produce. In researching material for this address, the issue of quality has surfaced again and again in relation to Canadian wheat. That, i.e., this pursuit of excellence in quality, has been responsible for our dominance of the best cash markets in the world. The interesting thing is that most references to quality surround the technical merits of our grain e.g. gluten strength, protein, ash, missing time, etc. The extremely narrow guidelines for varietal licensing coupled to its pyramid structure automatically ensure an ever-increasing quality. What is often not referred to is the *quality of consistency*. This quality of consistency is a blend of the licensing method for new varieties, the grading system and finally the gathering system which blends and smooths our zonal variation or as the case may be segregates those same variations. I believe this quality of consistency has almost as high a selling value as the technical merits of the grain it represents. Importing countries, I believe, value highly the consistency of our export cargoes, knowing that when it is processed through the entire system, from the miller to the consumer, there will be no surprises. Where many people would advocate that technological developments in the milling industry can compensate for the intake of grains with widely separate technical merits I would argue the opposite. I agree there may be some gain in latitude of technical merits; however, it is my fundamental belief that the individual delivering a product that is of narrowly defined consistent quality will carry the day in any sales program. My experience as a producer has shown me that in most cases any adaptation of a sophisticated high throughput technology has required an increase in the consistency of the product supplied to it to allow it to function at maximum efficiency. The final model for any new emerging class of wheat and its varieties should embody those two principles: the principle of the highest technical quality coupled to the quality of consistency. Should we model the emerging CPS classes of wheat using the aforementioned principles, I have no doubt it will dominate the world market niche with every bit as much strength as our present HRS wheats do.

In conclusion the factors surrounding the development of any new class of wheat and its varieties must not only strive to increase the total net return to the individual producer, it must serve to increase total returns to the entire region. To that end, any new class should be developed around long term demand projections, both domestic and export. We must take into account that the varieties of our major competitors might not be the ones to automatically fill a new class. We should be aware that varieties developed outside of Canada are developed with two targets in mind, the first being government farm support programs where total yield determines dollar support and then an export program where technical quality can be offset by large export subsidies. We need a commitment of research dollars to develop our own varieties suited to our own environment that, when fully developed, will share the support of our marketing institutions in developing the markets for them.

MILK AND DAIRY PRODUCTS SESSION

U.S. dairy situation and outlook

James J. Miller

The level of uncertainty about 1987 conditions in the dairy industry is extraordinary. Milk production will be buffeted by the conflicting forces of a continuing supply shift and lower returns than during most of the eighties. Moreover, the Dairy Termination Program (DTP) was superimposed on these basic factors. The DTP is removing a sizable share of the industry's producers and has partially obscured the actions of those who will remain a year from now. Industry conditions in late 1987 may set the pattern for the rest of this decade.

DTP DROPS MILK OUTPUT

Milk production in early 1986 still reflected the 1985 surge in output that was triggered by higher milk-feed price relationships and by the resumption of normal production by most diversion program participants. Winter production was at record levels and was up 7% from that of a year earlier. Since then, the DTP has progressively reduced milk output; production was 4% below that of a year earlier in October. For all of 1986, second-half declines will not offset first-half increases – leaving the annual total up about 1% from that of 1985.

Output per cow has been driven by increased concentrate feeding resulting from favorable milk-feed ratios. The small gains from the output per cow of a year earlier during July-October do not represent a weakening. One of the after-effects of the diversion program was a very unusual seasonal pattern in milk per cow during 1985. Compared with the output of 1983 (the most recent year not affected by the diversion program), 1986 increases have been steady and strong. Milk per cow in 1986 will total about 2.5% above that of 1985 and more than 6% over that of 1983.

The DTP has sharply reduced milk cow numbers. In early fall, cow numbers were 4% below those of a year ago. At this stage, inferences about non-DTP producers are very tentative. The intentions of the DTP participants and the reported cow number pattern suggest that non-participants slightly increased cow numbers last spring and have maintained that level since then. Expansion by nonparticipants may have been moderated by relatively low returns over concentrate costs, financial difficulties for some producers, and easing of the upward pressure caused by a very large supply of dairy heifers. Average cow numbers for 1986 probably will be down about 1.5% from those of last year.

THE DAIRY TERMINATION PROGRAM

The DTP triggered one of the sharpest structural changes ever in the dairy industry. Almost 14 000 producers agreed to sell their dairy cattle for slaughter or export and to stay out of milk production for at least 5 years. These producers had marketed over 12 billion pounds of milk in 1985. The bids averaged about $15 per cwt of 1985 marketings.

Most of the DTP producers left during the first period, April-August 1986. More specifically, the heavy slaughter months were April, May, and August. Participation generally was much higher in the Southern and Western regions than in the Northern regions. Contracting farmers tended to be average or above average in both herd size and output per cow.

The DTP did not cause these structural changes; most of the producers probably would have left dairying by the early nineties. The DTP compressed exit into a shorter adjustment period. While such an accelerated adjustment may benefit both producers and taxpayers, it is the responses of producers and consumers to the current and expected prices that will determine if large surpluses are behind us.

FEED PRICES LOWER

Concentrate feed prices have fallen and are expected to be relatively low in 1987. Next year's farm price of corn probably will be down more than a third from 1985. However, this comparison greatly exaggerates the resulting effects on the profitability of milk production. Protein feeds are an important ingredient of dairy rations. Soybean meal prices during 1987 are expected to be only moderately below those of 1986 and considerably above those of 1985 because of a shift of value from oil to meal. In addition, the price paid for dairy feed includes a substantial margin to cover costs of transportation, manufacture, and merchandising - which have not declined. At current prices, a 25% drop in farm corn price would be equivalent to an 8% decline in average ration value. In terms of profitability of milk production, such a drop in farm corn price would be equivalent to less than a 2% increase in milk prices.

The 1986 average value of concentrates will be about 6% below 1985's $7.35 per cwt. The effective milk-feed ratio will average about 1.75, up just slightly from that of 1985. In 1987, the average concentrate value probably will decline 8-12%. The milk-feed price ratio will be considerably higher, probably a record.

PRODUCTION OUTLOOK

Next year will test whether the reduction in returns have been sufficient to blunt the upward momentum in milk production. A record-high milk-feed price ratio will provide incentive for strong increases in output per cow. However, the incentive to expand cow numbers is much less. Returns over concentrate costs may be up slightly from those of 1986 but will stay well below the levels of the early eighties. The certainty of support-price reductions if large surpluses return may dampen enthusiasm for major new investment.

Lastly, larger numbers of dairy operations changing ownership may weaken cow numbers. Typically, some time passes between when the former owner stops production and when the new owner reaches full production. Under these conditions, nonparticipants probably will continue to expand, but only moderately.

About three-fourths of the DTP cows will have been slaughtered by the start of 1987. Slaughter under the DTP will average about 20 000 head monthly during the first half of 1987, with somewhat heavier slaughter during the winter than during spring. July-August slaughter will be considerably larger as the end of the program nears. Milk production during the first half of 1987 probably will be 2-4% below that of a year earlier because of the DTP. Second-half output probably will be closer to that of a year earlier. For all of 1987, milk production is expected to be down 1-3%.

TIGHTER MARKETS BOOST PRICES

Farm and wholesale prices responded to tighter supply-demand conditions by posting a substantial seasonal rise during the second half of 1986. Butter prices reached CCC's sell-back level last summer, American cheese prices rose about 6¢ per pound, and even prices of nonfat dry milk edged up this fall. The rise in the Minnesota-Wisconsin (M-W) price of manufacturing grade milk has exceeded 70¢ per cwt, bringing this fall's average milk prices above those of a year ago. Seasonal rises of this size in market prices have been rare in the surplus-dominated eighties but were typical of most of the seventies. Because of large declines early in the year, 1986 milk prices will average about 30¢ per cwt below those of a year earlier. Adjusted for differences in deductions, average milk prices will be down about 55¢ this year and likely will be the lowest since 1978.

A seasonal return to surplus conditions and the 25¢ reduction in support price on January 1 will push prices sharply lower by next winter. However, the more moderate surplus may not push the M-W price as much below support level as in most recent years. The second-half seasonal rise is currently expected to be moderate, possibly similar to this year's. Such an increase would leave the 1987 average price of all milk slightly below that of 1986. The effective farm price would be similar to this year's.

The price projection for late 1987 is by far the most tentative aspect of the outlook. Second-half developments probably will affect prices the most. If supplies are building by then, seasonal rises might be minimal. On the other hand, large price increases could occur if milk production continues to weaken after the end of the DTP.

RETAIL PRICES STEADY

Retail dairy prices were fairly steady during the first half and were below those of a year earlier. Prices have risen slowly this summer and autumn, but part of the wholesale and farm price increases have been absorbed by a narrowing of margins. The 1986 average will be close to last year's, the first time in about 2 decades with essentially no rise. Retail prices in 1987 probably will be up only 1-3%.

DAIRY SALES STILL STRONG

Data for recent years clearly demonstrate that commercial use of dairy products responds to declining real retail prices and economic growth. The size of recent increases also implies that sales expanded promotion may also have been important. Although gains slackened this summer, commercial use will be about 3% higher this year. Since 1983, sales have grown 10%. Conditions probably will stay generally favorable in 1987. However, economic growth has been a little sluggish, and gains in sales may slow to 1-3% next year.

The surge in commercial use in recent years has been unusually broad. Sales in almost all major categories have been strong. Cheese and fluid products posted sizable gains this year. Butter sales have about matched last year's strong level, while commercial disappearance of nonfat dry milk has been higher. Sales of frozen desserts have increased, but cottage cheese use has been steady.

COMMERCIAL STOCKS LOW

Commercial stocks have been at low seasonal levels since late spring. Low stocks played a role in the size and timing of wholesale price rises this year. This year's better-balanced market might have functioned more smoothly if additional stocks had been available. Like last year, year-end commercial holdings will be below 5 billion pounds. Rebuilding these stocks will absorb some of next winter's surplus.

GOVERNMENT PURCHASES DOWN

After heavy purchases during the first half of 1986, surplus removals fell far below those of a year earlier this summer and fall. During August- November, net purchases came to about 400 million pounds, less than the monthly sum for any of the corresponding months of 1985. The annual total probably will be 10-11 billion pounds, down from more than 13 billion in 1985. Like most recent years, purchases of nonfat dry milk were large relative to the butter surplus. Removals in 1987 currently are expected to be 4-7 billion pounds.

In mid-November, uncommitted inventories were equivalent to 8.2 billion pounds of milk, down 8% from those of a year ago. Continued heavy donations and lower expected purchases imply that government holdings will be down sharply by late 1987.

WORLD DAIRY SITUATION

Despite the use of supply control measures in many major dairy countries, world supplies of dairy products remain large. Milk production in the 38 selected countries is expected to be up 1% this year. Mexico, India, and the USSR posted large increases, but output in Eastern Europe and Brazil was down. In 1987, milk output may hold about steady, if expected declines in the U.S. and the EC materialize.

World trade in dairy products has suffered in 1986 as demand by most importing countries continues weak. Exports (excluding EC-intra trade) for butter, nonfat dry milk (NDM), and casein are declining from 1985 levels while cheese exports remain nearly unchanged. The outlook for 1987 is for increased exports of butter (which includes butteroil) and cheese while NDM and casein exports are projected to be about the same. International prices for butter, butteroil, and cheese are down this fall as competition among suppliers remains intense. NDM and casein prices continue to be quite stable. World stocks of dairy products will continue to be burdensome in 1987 and competition for export sales and a "buyers' market" will likely keep prices down next year.

SUMMARY

The story of 1987 will be written during the second half of the year, since early 1987 will still be dominated by the effects of the DTP. By this time next year, surpluses could be building back towards very heavy levels, or market price rises could indicate a period of reasonable supply-demand balances. The key question is whether the downward adjustments to the support price have been enough to establish a lasting balance in the dairy markets.

The potential contribution of on-farm micro-computers to enchanced dairy production competitiveness

Wes Lane

I consider it both a pleasure and an honour to be here today participating in this 1986 Canadian Agricultural Outlook Conference. At the same time I must admit that I accepted this invitation with somewhat mixed emotions. On the one hand, there are numerous people who have had considerably more exposure to on-farm micro-computers than I and who could very capably have addressed this topic. At the same time, I realized that this occasion presented an opportunity to dream a little bit, to think about what might be, and to identify what needs to be done to bring some of these possibilities into reality; a challenge I couldn't ignore.

At the outset, let's look at a turn-of-the-century Canadian dairy farm. I don't say typical farm, but simply a dairy farm in Canada at year 2000. This farm consists of 100 milking cows and replacements housed in a modern free stall facility. Their current herd average is 11 000 litres per cow. The bovine growth hormone is being administered to all cows more than 60 days into their lactation. It's shortly after midnight and six cows are being milked by a robot, while being fed a portion of their own individually formulated total mixed ration in a specially designed feeding/milking stall. The milk is automatically weighed and tested for butterfat, protein, calcium, total solids, and somatic cell counts and then passed through an ultra-filtration process whereby the milk is separated into a concentrate for future use in a manufacturing dairy processing plant and a permeate (whey and water solution) which is retained on the farm and utilized as feed. The liquid concentrate is quickly cooled and stored in a bulk tank until picked up by a milk transport later in the week.

The amount of milk, its composition, along with the time of milking and amount of feed consumed, is transmitted to the farm computer centre where a micro-computer accumulates data for the farmer's reference when he comes to the office to check on his semi-automated dairy enterprise after breakfast.

It is normal on this farm for most of the high producing cows to be milked four to five times a day. In fact they may be milked every time they come to the feeding stall.

This dairy farmer in year 2000 is likely to spend at least four hours daily in his computer centre reviewing and monitoring what's happening with his herd, his feed inventory, his machinery and equipment maintenance, and his overall farm operation.

One of the most important things he will do this morning is to receive an electronic transfer of his up-to-date farm financial status from his bank. This information will provide him with the current financial position of the farm. Individual cow profit levels will be identified through his production management programs and incorporated into the overall farm financial picture. This will permit the dairy farmer of year 2000 to see at a glance how the performance of the farm stacks up against budgeted figures.

This kind of information will be invaluable in assessing where he is now and in planning for the future.

On a regular basis, individual cow production and health data will be electronically forwarded to the national/provincial dairy record processing centre to permit these data to be available for national genetic improvement programs. The farmer will be actually paid for supplying such data.

The focus of the farm computer centre will be the on-farm micro-computer incorporating both production and financial data to permit sound economic decisions to be made with confidence. Video equipment will also be in place to monitor specific areas of the barn including the automated feeding/milking stall, the maternity area, and the free stall area to enable the farmer to see first hand what's happening in his barn at any time.

No doubt, this sounds rather far-fetched to some. Maybe so, but virtually all of these things which I touched on are already technically feasible today, with considerable effort being put into assessing their commercial viability.

Let's step back to the reality of the 1980s. In the early 80s, many predictions were made about how the micro-computer would take off in the agricultural community. Some so-called experts were predicting 50% of Canadian farms would have micros by the mid-to-late 80s. As you are all well aware, this rapid growth has not materialized and there are lots of views as to why this has not happened.

However, two facts remain which indicate to me that there is still a great likelihood that the micro-computer age will take off in primary agriculture eventually. The first one is that virtually every other industry one can think of has adopted the extensive use of micro-computers. How many people here today do not have a micro-computer in their organization or company? Not very many, I expect. As Canadian farms continue the trend toward a more business type of approach I think it's inevitable that the micro-computer will play a more prominent role in the future.

The second fact is that the cost of both hardware and software continue to fall. Micro-computers are within the reach of all businesses and a great many homes.

At the present time, it is estimated that somewhere between 5 and 10% of Ontario's farmers presently own a personal computer. Why has the adoption of micro-computers not been greater? Again, I think there are two main reasons that are having an influence here. First, farmers have not been shown what computers can do for them or how they can be a useful farm management tool. Second, farmers are not accustomed to working with a keyboard and find the input of data to be a very tedious and time-consuming job.

I think that steps can be taken to overcome each of these constraints or drawbacks and I'll comment on them in a few moments.

However, I first want to try to address the potential contribution which micro-computers can make in a little more detail. I was recently at a meeting in the U.S. where a speaker talked about the kinds of farmers who would be the survivors in the U.S. dairy industry. He said the immediate survivors would be those with no debts and good profitability, and those with some outside farm income. However, he suggested that the real survivors in the longer term would have the following characteristics:

- they would have to learn to be top notch business executives;
- they would have to be good managers first and foremost;
- they would have to recognize their own managerial strengths and weaknesses and take steps to improve the weaknesses and perhaps rely on specialists or consultants to help them in these areas;
- they would need to keep and use extensive records;
- they would need to make decisions on fact rather than emotion;
- they would need to be good time managers;
- they need to recognize good advice from bad; and
- they would need to provide for continuity of their operation for the next generation.

I think these characteristics could be applied to future Canadian dairy farmers and I think they point in the direction of a micro-computer. Certainly this piece of technology can help a farmer to do the very things that the real survivors are going to have to do to remain competitive.

I have simply made a list of some of the potential applications for a micro-computer on a dairy farm. These include three main areas, that is, production management, financial management and the integration of the two.

Under production management one can include:

- cow production data-measuring production outputs (milk recording);
- feeding management-group feeding, individual computerized feeders;
- feed inventory control;
- ration formulation;
- herd health management;
- sire selection/cow mating;
- production forecasting;
- quota management; and
- heifer management.

Under financial management one can include:

- basic accounting programs (profit/loss position);
- cash flows;
- balance sheets;
- budgeting;
- tax management;
- investment portfolio;
- RRSP management; and
- retirement planning.

Most farmers are already using some form of computerized services in both production and financial management through their banker and/or accountant in the case of finances and through milk recording programs in the case of production management. However, the view is held by many that there is potential to integrate more of these data through the use of a micro-computer and provide a very thorough management and planning tool. However, in the short term, we probably need to concentrate on introductory programs and uses for the micro. The more sophisticated uses will evolve as more experience is gained with it.

A few moments ago I referred to the need to illustrate to farmers what micro-computers have to offer as a management tool. I believe that this is one of the primary reasons why micros haven't caught on more quickly in primary agriculture. One of the basic questions to deal with here is whose responsibility is it to provide assistance and to show what can be done. A study conducted in 1983 in Ontario, which I had a small part in, identified the need to provide education and advice to farmers concerning the practical use of micro-computers. In Ontario, a project known as Agricultural Computer Extension (ACE) was formed by the Ontario Ministry of Agriculture and Food to address this very concern. It is my view that the formation of this three-man group was on the right track. The major efforts of this group have focussed on publishing a software catalog and a newsletter, answering specific enquiries from farmers and speaking at farm meetings. I think the lack of resources available to the group is limiting its scope of activity at the present time. On the other hand, I feel the job is much bigger than can be tackled by government alone.

It is interesting to note the approach being taken in other countries. For instance, an organization has been founded in the Netherlands to stimulate the efficient use of data on dairy farms and to provide for a co-ordinated development of computer systems to be used by the dairy industry. This organization, known as Tauras, was founded in 1985 by several of the Dutch dairy farmer organizations. Representatives from the organizations form the Board of Directors of Tauras and they direct its work. The Board is supported by a group of seven advisors or staff people from the agri-business companies, service organizations and the Ministry of Agriculture and Fisheries.

Activities undertaken at present by the organization include tackling specific projects on such things as the functional specifications for computer programs for dairy farmers; standardized interfaces; and the evaluation of software with the intent of eventually certifying software for dairy management, to name a few. Courses are organized for dairy farmers on various aspects of computer use as well as having an advisory type of service available to answer farmers' questions. Consideration is also being given to a national data network within the Tauras approach.

In the UK both the Milk Marketing Board of England and Wales and the Scottish Milk Marketing Board are involved in providing assistance to their producers regarding on-farm computer use. Both Boards are actually in the business of merchandising hardware and software to their producers. They have entered into agreements with a software company to merchandise a dairy production management package and have supported it with technical advisors who work with farmers on a fee-for-service basis.

Another approach being introduced in several European countries is the use of some type of hand-held micro-computer to record data in milk recording programs. This approach, while offering some substantial savings in both turnaround time and cost of entering data, also serves to spark some initial interest among farmers in the technology.

In my view, there is a need to demonstrate to farmers what the micro-computer has to offer before its widespread use will become a reality. But who should be doing it? I really feel that it should involve a joint effort with representation from the major stakeholders in the industry. The function of extension in agriculture has traditionally been the responsibility of provincial governments in this country. However, the provision of advisory type services to farmers has changed dramatically over the last decade. Agri-business has tended to become more service oriented. Producer organizations like AI, Breed Associations, Milk Recording organizations and marketing boards have become increasingly more active in attempting to promote and encourage the use of new technological developments.

I feel that the dairy industry in this country is in an enviable position. There exists in the industry a very strong spirit of cooperation and examples such as the Canadian Milk Supply Management Committee and the Canadian Milk Recording Board exemplify this spirit. Obviously, there has to be some fairly strong leadership, but I think the thing that makes these mechanisms work is the desire on the part of all parties to work toward a common goal in the interest of the overall industry. Such an approach in exploiting the potential of on-farm computer technology may also have some merit.

In fact, the Canadian Milk Recording Board has recently taken on a project to encourage the co-ordination of data processing activities among dairy farm organizations and related agencies. The initial phase of this project has been the development of a memorandum of understanding outlining the principles to which organizations agree for the electronic exchange of data.

A further phase of this work is expected to address the opportunities for on-farm computer access of these industry data.

I think the potential of having on-farm computers accessing central computers is a means of overcoming one of the drawbacks which has been partly responsible for the relatively slow growth of on-farm computer use, that is, data entry.

I don't think farmers are very different from a lot of us. They don't want to have to spend a lot of time keying in data. In the production end of things, milk recording programs already collect and record a lot of data that could be extremely useful to a dairy farmer with his own micro. If milk recording is going to survive then I think it has to provide facilities for farmers to access their own information and down load it on their micro for further analysis and reference.

This approach is already in place in several milk recording programs in the U.S. At the present time, producers can access their information from dairy record processing centres in North Carolina, California, New York and Michigan and there may be others.

I think the micro-computer has a great deal of potential to enhance dairy production competitiveness. The adoption of this technology will allow us to better compete with both other foods and beverages and with dairy industries in other countries. You can be assured that both of these competitors are already very actively pursuing the potential benefits. In this light, we are in danger of falling substantially behind the competition if we don't capitalize on the opportunities which are available.

In conclusion, I feel that the micro-computer has a lot to offer.

As its use becomes more widespread, one of the challenges which I feel needs to receive more attention is the integration of financial and production information in order to obtain a clear picture at all times of where the business stands. I tended to talk a lot about production management packages and approaches. However, the financial management side of the picture is obviously just as important and I think the real potential of the micro-computer is in being able to bring this information together.

Lastly, I think a co-ordinated effort by all stakeholders in the industry is needed to help dairy farmers in Canada realize the full potential of the micro-computer. The challenge in the short term is to address how such co-ordination could be brought about.

A comparative analysis of the Ontario and New York State dairy industries

Bob Morrison

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INTRODUCTION

The study

The "free trade" discussions between Canada and the United States offers a timely opportunity to examine trends within the dairy industry of Ontario and New York State. The advent of free trade between Canada and the U.S. could carry with it some dislocation of production patterns within the dairy industry. Any such dislocation would follow patterns of economic efficiency in a free trade environment. Within this framework, the following study will examine trends with the dairy industry in New York State and the Province of Ontario, two across-the-border potential trading partners.

The nature of the industries

New York State

The three major policy features of the dairy industry in the United States are Marketing Orders, the Price Support System and the Dairy Reduction Program. The Marketing Order System regulates the price of manufactured milk that processors are compelled to pay to farmers. This price is determined by the price processors pay farmers in Wisconsin and Minnesota under a theoretical free competitive market condition. Fluid milk is tied to the Wisconsin- Minnesota price plus differentials for higher quality and transportation cost.

By compelling processors to pay set prices to farmers, the Market Order program ensures that processors will purchase only the quantity of raw milk they can profitably process and sell. Under conditions of downward price inflexibility, the market will not always clear and surpluses will exist.

The second major dairy program, the Price Support System, provides processors with a guaranteed price and market through Federal Government purchase of unsold butter, cheese and skim milk powder. With this assurance of a market, processors can profitably purchase all milk that farmers produce. The assurance of a market through the Price Support program also encourages farmers to produce larger quantities of a product than would clear a market under normal conditions.

The Federal Government has purchased between 7% and 12% of annual production during the period 1980 and 1985. This is stored and sold back to processors during a time period of shortages, used for foreign or domestic aid programs, sold on international market, or used as animal feed.

The Minnesota-Wisconsin price is heavily influenced by the support prices. The government's assurance of an attractive price encourages processors to pay a higher price to farmers than they would without the Support Price program. In this sense, the Price Support program and Marketing Orders influence the entire U.S. dairy industry. To the extent that Support Prices return more than normal profits, output is encouraged and surplus generated.

Dairy Reduction Program – The new U.S. farm bill attempts to reduce the surplus using two different approaches. First, the bill does not increase support prices but includes deductions designed, in part, to finance the second part of the plan to reduce surplus. The second approach is the dairy herd buy-out program intended to retire dairy farmers from milk production. Farmers participating in the program are paid to withdraw their herds for slaughter and their facilities from dairy production for a minimum of five years.

This program, coupled with the promise of reduced price support levels, is intended to reduce the dairy surplus.

Ontario

The Ontario dairy industry is under the influence of a strong federal dairy policy.

The elements of the federal dairy policy are a national milk marketing plan, based on supply management, an offer to purchase price support program, a target returns price for industrial milk and a direct subsidy payment to industrial milk producers. These programs are briefly described as follows: The national supply management program for industrial milk attempts to determine "demand" on a national basis and allocates a share of national production requirements to each province. The target returns program establishes a price for industrial milk designed to provide efficient dairy producers with a "fair" return for their capital and labour. The target return price is made up of a support price at which the Canadian Dairy Commission, with federal government authorization, will purchase butter and skim milk powder, less a processor's margin plus a direct subsidy payment to producers.

The support price establishes a floor price for dairy products in Canada. The direct subsidy payment to producers gives a portion of the target return from a nonconsumer source, and in so doing provides a larger market for dairy products than would be the case if all producer returns came directly from consumers.

Ontario's dairy industry is administered by the Ontario Milk Marketing Board (OMMB) which acts by authority granted from the Milk Commission of Ontario. The OMMB allocates the province's share of the national industrial output to individual producers as has been mentioned. Initially this allocation to individual producers took place on the basis of historical output, but since 1980 a centralized quota exchange has facilitated the transfer of quota among producers.

Within the Province of Ontario, the marketing of fluid milk is also controlled by a supply management quota regulating output. The price of fluid milk is determined by a formula based on producers' cost of production. This price is maintained by controls on imports from foreign and interprovincial sources. The fluid marketing quota, as with industrial milk, was initially allocated on an historical pattern basis, and is now traded between producers at a monthly quota exchange managed by the OMMB.

Canada is not without a dairy surplus. Butter's by-product, skim milk powder, is produced in excess of domestic market requirements. An in-quota levy is collected from producers to pay for the export of this product. Other levies are charges for production levels exceeding the producers' quota.

The sample

Since 1976, an analysis of the Ontario dairy industry has been produced as a co-operative venture among the Ontario Milk Marketing Board, Agriculture Canada, the Canadian Dairy Commission, the University of Guelph and the Ontario Ministry of Agriculture and Food.

The report, called the "Ontario Dairy Farm Accounting Project" (ODFAP), is compiled from data collected from a stratified random sample of farms. Farms are selected from the files of the Ontario Milk Marketing Board. The samples represent the dairy industry in various sections of the province, different farm situations and various levels of technology. While Northern Ontario, Muskoka, Parry Sound and Renfrew have been excluded, 93.5% of Ontario's industry is represented by this study.

As such, the Ontario Dairy Farm Accounting Project probably represents the most accurate published picture of the Ontario dairy industry. However, there are a number of variations in some of the statistics presented in this report when compared to other published data. For example, this study suggests the average dairy farm consists of 42 cows, producing 11 650 lb of milk per cow per year (1981). OMMB data from the same period suggest 45 cows per dairy farm with an average production of 10 792 lb per cow. While there is a small variation in cow numbers and output per cow, output per farm is almost the same in these studies (ODFAP data – 501 983 lb/farm and OMMB data – 489 492 lb/farm).

The 1981 Census of Agriculture has been used to verify some of the data. The Census reports a significantly larger number of dairy cattle in Ontario than the data published by the OMMB. The Census reports 552 748 cows and 12 841 dairy farms, while the OMMB reports 485 000 cows and 10 914 licensed milk producers. Part of this difference will be explained by the fact that cream producers will be recorded in census data but not in OMMB data. Cream producers account for 3.5% of milk sold in the province. Other discrepancies could be accounted for by the fact that the census includes small-scale dairy cattle holding. However, the census does support the ODFAP study in that it reports 43 cows per dairy farm.

A second study of the Ontario dairy industry is used to make the comparison with New York State. This study, the Ontario Farm Management Analysis Project (OFMAP), consists of Ontario dairy farmers who have volunteered for the study, or been recruited by Ontario extension workers, or credit agents from the Federal Farm Credit Corporation (FCC). This second study is used because the method of sample selection more closely resembles the method of sample selection in the State of New York. It appears that the results from the voluntary OFMAP study are better, in terms of productivity than those from the randomly drawn ODFAP study. This better-than-average feature is confirmed when important statistics from this study are compared with other published data. For example, the OFMAP indicates that 1981 milk production per cow is 12 675 lb. This compares with 11 650 lb per cow in the ODFAP, 10 792 lb per cow from OMMB data, and 10 242 lb per cow extrapolated from OMAF Publication #20. Similar indicators of superior efficiency and productivity from the voluntary sample of OFMAP report can be observed through this study. Approximately 20% of the OFMAP sample is drawn from F.C.C. supervised clients who have higher than average debt to asset ratios. However, financial ratios are not an area investigated in this study, but may relate to measurements of physical productivity as pointed out in an earlier F.C.C. study.

The OFMAP study reports on the results obtained by the top one-third of the farmers (as determined by net farm income) as well as the overall results for the entire group. Both sets of results are included in this study.

The New York State information is contained in "Dairy Farm Management – Business Summary – New York" (DFM-BS). The annual New York State data are compiled from approximately five hundred dairy farms contributing on a voluntary basis. The sample excludes dairy farm renters, dairy cash-crop farmers, and part-time operators. The farms included in the report do not represent the average dairy farm in New York State, but represent a "better than average" situation. For example, the 1982 New York State "Dairy Farm Management – Business Summary" indicates average milk production per cow is 14 762 lb per cow per year. This compares with 12 075 lb per cow quoted in the New York State Agricultural Statistics and 11 229 lb per cow extrapolated from the U.S. Census of Agriculture for New York State.

While the methodology of sample selection is not identical in the Ontario Dairy Farm Accounting Project and the New York "Dairy Farm Management - Business Summary", the studies are similar in their areas of inquiry and, as such, are suitable for comparative analysis of major trends. On the other hand, the Ontario Farm Management Analysis Project and the New York "Dairy Farm Management - Business Summary" are similar in their method of sample selection and areas of inquiry. These two studies can then be used to measure direct differences in measurement of efficiency and productivity as well as trends in these important indicators. The U.S. dollar has been converted to Canadian dollars and, therefore, the trends measured in dollars from New York State contain an element of absolute change expressed in U.S. dollars and an element of relative value between U.S. and Canadian dollars. Due to the steady decline of the Canadian dollar vis-a-vis U.S.'s dollar (11%), New York State trends, measured in Canadian dollars have been exaggerated. The rate of exchange between currencies was provided by the Economics and Policy Coordination Branch of the Ontario Ministry of Agriculture and Food.

OBJECTIVES

The intent of the study is to look at the Ontario dairy industry by comparing it to the New York State industry. The study will look at various factors in an attempt to demonstrate changing patterns. These factors are:

- Size Factor Measurements
- Farm Income Measurements

- Rates of Production Measurements
- Labour Efficiency Measurements
- Capital Efficiency Measurements
- Cost Factor Measurements

Size factor measurement

Given the free movement of resources from one enterprise or opportunity to another, farm business will expand or contract to realize existing opportunities. The changing size of a dairy enterprise is an important consideration in assessing how an industry's perception of existing opportunities is changing and/or the industry's ability to respond to changing opportunities. Changing size factors can affect other segments of a dairy farm such as the efficiency of labour, capital and level of profitability. When the same level of management is applied to farms of various sizes, large farms produce higher net incomes because they have more productive units (cows, acres) from which to make a profit. As well, fixed costs per productive unit will probably be smaller (and therefore net income higher) as the larger farm has more productive units to cover fixed costs. Another factor contributing to the economics of scale associated with larger farms is that they tend to pay less for a unit of input than do smaller farms. On the production side, the data from New York State suggest a strong relationship exists between the size of the herd and the level of production within the New York State dairy herds. (See Appendix 1)

The following tables show many characteristics of Ontario and New York State farms as they relate to size.

Table 1 indicates the number of cows per Ontario farm and New York State dairy farm represented in the studies. New York State farms increased the number of cows by 19% during the period 1980 to 1984. By way of contrast, the Ontario herd demonstrated size stability with a slight decline being noted in the ODFAP study and in the top one-third farms in the OFMAP study. The OFMAP dairy herd is 57% of the size of a New York State herd included in this study. However, it should be noted that the Census of Agriculture for New York (1982) indicated the average herd size to be 64 cows, or 28% smaller than indicated in these data. Similar use of the 1981 Canada Census of Agriculture indicates the average size of a dairy herd is the same as reported in the ODFAP study, while the Census reveals the average size farm is 14% smaller than reported in the OFMAP study and 44% smaller than reported for the top third of this group. Nevertheless, the New York farms are larger than the Ontario farms and appear to be becoming more so.

The range of herd sizes within the ODFAP sample was a low of 15 cows per herd to a high of 164 cows per herd (1984). Only 10% of the New York State farms had fewer than 40 cows per herd and 24% of the herds exceeded 100 cows in 1984.

The size of the land base available to the dairy farms is summarized in Table 2.

The number of tillable acres on the average New York State farms included in the study has increased 14% during the period 1980 to 1984. On the other hand, the average size as measured by the number of tillable acres has increased by 2% on the ODFAP dairy farms.

The OFMAP farms increased in size by 8% overall, with the top one-third (selected on the basis of N.F.I.) increased in size at a rate very similar to the New York State farms.

In 1984 the data showed the New York State dairy farms were 22 tillable acres larger than the average OFMAP dairy farm and 32 acres smaller than the top third of this survey. A third characteristic of farm size is shown in Table 3. The total milk sales per farm are an indication of the volume of business generated per operation. The data indicate the New York State farms produce considerably more milk than the Ontario dairy farms, as would be expected given their larger number of cows per farm.

Milk sales per ODFAP farm have increased 2.3% between 1980 and 1984. Conversely, milk sales per farm in the New York State study increased by 28%. In 1984, milk sales per farm in the OFMAP study were 47% of milk sales per farm in the New York State study. The top farms in the OFMAP study report milk sales of 57% of those found in the New York study.

Data available through Ontario's Publication #20 and the OMMB's Statistical Handbook give lower figures for pounds of milk sold per farm. For example, extrapolated data from Publication #20 and the Statistical Handbook show milk sales per farm at 491 689 lb/farm and 483 965 lb/farm, respectively, for 1982.

A similar phenomenon is found when the New York State statistics are compared with the results of the New York State study. The New York State Agricultural Statistics suggest the average dairy farm (excluding those farms reporting less than ten dairy farm (excluding those farms reporting less than ten dairy cows) shipped an average of 788 927 lbs of milk in 1984.

Two additional measurements of size are shown in Table 4 and Table 5. Table 4 shows the number of months of labour utilized on dairy farms in New York State and Ontario. The data suggest the New York State farms employed 16% more labour in 1984 than 1980, while the ODFAP farms have decreased the labour requirements by 5%. The New York State farms employed three workers in 1984 and the OFMAP farms employed 2.3 workers, including the operator. The latter farms increased their labour requirements by 6% while the top one-third farms in the OFMAP survey remained unchanged in terms of labour utilization.

Table 5 demonstrates the total capital investment on the New York State and Ontario dairy farms. The amounts shown are measured in Canadian dollars.

The value of farm assets in New York State increased by $174 826, or 33%, between 1980 and 1984, when measured in Canadian dollars. The increase in value of assets on the ODFAP farms was 41% during the period in question. Asset values increased by 46% on the OFMAP farms and by 48% on the top one-third of the OFMAP farms. These percentages represent a $240 000 and $300 000 increase in asset values, respectively.

The breakdown of percent change in the value of capital assets is recorded in Table 6.

Major changes have taken place in quota values in Ontario, real estate values in New York State and Ontario, and machinery values and feed in New York. If the influence of quota is removed from the Ontario data, the increase in asset values is reduced from 41% to 20% in the ODFAP data.

Income factor measurements

For every business the growth and maintenance of income is a dominant reason for its existence. An analysis of the income trend gives an indication of the direction an industry is taking and is, therefore, an important consideration.

The following data consider the changes that have occurred within various measurements of income on New York State and Ontario dairy farms. The first measurement of income, total cash receipts, is shown in Table 7.

The data in Table 7 indicate that total cash receipts grew at a much quicker rate in New York State than those in the ODFAP study, but at a similar rate to the OFMAP study farms. The New York farms produced cash receipts that were $92 000 higher than those in the OFMAP study and $42 000 higher than reported by the top one-third. In New York State, milk sales accounted for 86% of total cash receipts, while in the OFMAP study the milk cheque accounted for a smaller portion of cash receipts (77% - Table 8).

On the Ontario farms, dairy cattle sales and government income make up a large portion of the cash receipts (Tables 9 & 10).

It should, however, be noted that the American price support system raises the price of milk above the free market level. Consequently the New York State dairy producer receives an indirect subsidy. This system contrasts with the direct subsidy paid to Ontario producers.

With the exception of the growth of milk sales as a percentage of total cash receipts in the ODFAP study, and the growth of government payments in New York, the data found in Tables 8, 9 and 10, reveal a static picture.

Table 11 shows the trend in net farm income on New York State and Ontario dairy farms between 1980 to 1984.

Table 11 indicates a reduction in net farm income (N.F.I.) in both the New York State study and the ODFAP study. N.F.I. was reduced by 30% in New York and 41% in the ODFAP study. The OFMAP study reports a small decrease in N.F.I. (-1%) and a 5% increase for the top one-third. The level of income is comparable between New York and OFMAP farms ($25 000 vs $30 000), with the top OFMAP (selected on the basis of N.F.I.) having more than twice the net income of the other groups. It should, however, be noted, that average income for the New York and OFMAP farms is very similar over the five-year period ($30 000 vs $27 000).

Table 12 shows Net Farm Income as a percentage of total cash receipts.

As Table 12 indicates that N.F.I. as a percentage of total cash receipts has decreased very dramatically in both Ontario and New York State; however, the New York State decline was not as severe as that reported in the ODFAP study. The New York State decline was within the same range as that reported in the OFMAP study.

Another contributing factor to farm income is the price paid per unit of output. Table 13 shows the price of milk per cwt between 1980 and 1984 as measured in Canadian currency.

Table 13 indicates a 16% increase in the price of milk in New York State and more than twice that rate of increase in Ontario during the same period. This comparison does not take into consideration the changing value of the U.S. dollar vis-a-vis the Canadian dollar. Had the New York State data been measured in U.S. dollars, the rate of increase would have been 7%. Therefore, most of the percentage increase shown for the New York data in Table 13 results from the falling value of the Canadian dollar.

When the New York data are compared to the OFMAP study's absolute values, the data show the price of milk in New York is considerably lower than it is for the OFMAP dairy producers (17.38/cwt vs 21.05/cwt). It should be noted that the Ontario price includes the direct subsidy to the Ontario producers. Regardless of this the price of milk remains higher in Ontario and is becoming increasingly so.

Table 14 measures the rate of return on investment (R.O.I.) on New York State and Ontario dairy farms between 1980 and 1984. R.O.I. has been calculated using the formula:

$$\text{R.O.I.} = \frac{\text{NFI + Interest Paid - (Unpaid labour x \$10 000)}}{\text{Capital Investment}}$$

The data show a reduction in this measurement of income for the New York study and the ODFAP study (-2.9% and -3.8% respectively). The OFMAP study shows no increase or decrease in R.O.I. Rates of Return on investment are similar on the New York State farms and the OFMAP farms (5% vs 5.6%) with the top OFMAP farms showing the highest rates of return (8%) in 1984.

Rates of production measurements

An important consideration in evaluating the progress of an industry is its capacity to produce. An increasing capacity to produce would be associated with an industry that is continuing to develop and progress while a stable or negative rate of production change would be evidence of the opposite.

The following data examine the trends for production in dairy farms in New York State and Ontario during 1980 to 1984. Milk sales per farm have been described in Table 3.

The data from Table 3 indicate a significant increase in milk sales for New York State farms (+28%) and a slight increase in milk sales for Ontario farms (2.3% - 4%). The increase in milk sales per farm in New York State results from an increase in the number of cows per farm, as demonstrated by Table 1, and an increase in the milk sales per cow, as shown in Table 15. The lack of growth of milk sales on Ontario farms is attributed to both a lack of growth in herd size and milk sales per cow.

Table 15 describes milk sales per cow. The information suggests that milk sales per cow have increased by 7.5% in New York State, 4% in the ODFAP study and 2% in the OFMAP study. In 1984, milk sales per cow in the OFMAP study were 83% of the corresponding New York data.

Unfortunately, the Ontario studies do not contain sufficient data on crop production to determine rates of production. However, the data show that in the realm of milk production, Ontario farms and Ontario cows have made less progress than in New York State.

Some of the difficulties finding consistent data to describe this very important measurement of production are described in the Introduction to this study. Statistics published by the Ontario Ministry of Agriculture and Food place 1984 milk production per cow at 10 426 lb. The State of New York's *publication Agricultural Statistic* gives production per cow at 12 250 lb/year. These numbers would indicate that Ontario's production per cow is 85% of New York's.

Labour efficiency measurements

A fourth area of concern is the changing way labour is employed in the production of milk. If a production situation is improving, it must be the result of the more efficient use of a resource. Without this type of improvement, no efficiencies in the production process are possible.

Labour requirements have been reduced on ODFAP farms, increased on OFMAP farms, and milk production per cow has increased on both. At the same time, output and labour requirements grew on New York State dairy farms. The net effect of these changes are shown in Table 16.

Table 16 reveals that, in terms of labour efficiency as measured by milk sales per worker, the OFMAP surveyed farm labour is only 63% as productive as labour on New York State farms. The top one-third of the farms in this survey are 66% as productive as their New York counterpart. The data also indicate New York State labour is becoming more productive relative to Ontario labour, with New York State showing an 11% increase in the productivity of dairy farm labour during 1980 - 1984, compared to a 7% gain on ODFAP farms, and a small decrease in labour productivity on the OFMAP farms.

Cows per worker is another measure of the efficiency of labour. These criteria are shown in Table 17.

Table 17 further demonstrates the relative inefficiency of Ontario dairy farm labour when compared to the surveyed New York State dairy farms. New York State farms have 29 cows per worker while OFMAP farms are only employing 22 to 23 cows per worker. The rate of increase in productivity using these criteria is about the same for both the New York and ODFAP studies, (a 4% increase in New York State and a 5% increase in Ontario), while the OFMAP survey showed a decrease in labour efficiency (-3%), when labour efficiency is measured by cows per worker.

Capital efficiency measurements

The efficient use of capital is important. An improving capital efficiency is an indication of an improvement in the overall efficiency of an industry.

The following data demonstrate the trends in capital efficiency on dairy farms in New York State and Ontario during 1980 - 1984. The first measurement of capital efficiency, capital investment per cow, is found in Table 18.

Table 18 demonstrates a very substantial increase (43%) in the value of capital assets employed per cow in Ontario. During the same time period, the growth of capital assets in New York State was a relatively moderate 13%. When capital investment per cow is measured in U.S. dollars, the increase in asset value is only 2% in New York. Ontario dairy farms employ twice the capital on a per-cow basis as New York State dairy farms. These data do not reveal whether the additional capital employed in Ontario represents a difference in capital values per physical asset or a difference in the nature of the capital employed. One obvious difference is the value of quota on Ontario farms (approximately $4000/cow on Dec. 31, 1984).

Given the larger amount of capital employed per cow (Table 18) and the smaller milk sales per cow in Ontario (Table 15), it is apparent that capital employed per cwt of milk sales will be greater in Ontario than New York State. Table 19 shows this relationship.

The data in Table 19 show a growing efficiency in capital utilization in New York State relative to the trend in this important measurement of efficiency in Ontario, when capital efficiency is measured by the amount of capital used to produce a hundred-weight of milk sales. New York State milk producers required 5% more capital to produce 100 lb of milk in 1984 than they did in 1980. On the other hand, ODFAP surveyed milk producers utilized 39% more. Similar increases were reported from the OFMAP survey. The data reveal that Ontario capital has less than half the productivity of New York State capital ($50/cwt vs $116/cwt).

Another measurement of capital efficiency, capital investment per worker, is shown in Table 20.

While the data in Table 20 are not as strong an indication of the efficiency of capital as that found in the previous two tables, they nevertheless are a further indication of a trend to the inefficient use of capital in Ontario relative to New York State. Capital investment per worker has grown by 15% in New York State, while during the same period the growth was 40% to 48% in Ontario. In 1984, OFMAP farms had a capital investment of $327 155 per worker, while New York State farms had an investment of $225 930 per worker (measured in Canadian dollars).

Two additional measurements of capital efficiency, machinery investment per cow and real estate investment per cow, are shown in Tables 21 and 22, respectively.

The data indicate a larger growth in machinery investment per cow in New York State than in Ontario. New York registered an increase of 16% while the ODFAP study showed an increase of 5%, and OFMAP a 1% increase. New York State's machinery investment per cow is $1410, while OFMAP surveyed dairy farmers have a machinery investment of $2067 per cow.

Ontario dairy farmers are also utilizing significantly more real estate capital per cow than their New York State counterparts. OFMAP surveyed farmers have a real estate investment of $6226 per cow, while New York State surveyed producers have a real estate investment of $3642 per cow. The real estate investment per cow grew at the rate of 17% in New York State and 19% in Ontario between 1980 and 1984.

Cost factor measurements

Cost control is another important consideration concerning the direction an industry is taking. This section will look at nine measurements of cost control in the Ontario and New York State dairy industries. The first of these is feed purchases per cow, described in Table 23.

Table 23 demonstrates the range of feed purchases per cow. The rate of increase is larger in the OFMAP study than in New York State, (20% vs 14%), but less than in the ODFAP (10%). New York feed purchases are considerably higher than the corresponding Ontario ones ($688 vs $456).

Table 24 considers crop expenses per cow. Crop expenses include seed, fertilizer, sprays and custom work. Crop expenses per cow in New York State have increased at the rate of 17% over the period 1980 to 1984, while there has been a 32% increase in the ODFAP study during the same time period and a 39% increase in the OFMAP study. Crop expenses in New York were $236/cow and are $345/cow in the OFMAP survey.

Machinery expenses per cow are recorded in Table 25. The data suggest that during the period 1980 to 1984 machinery cost, on a per cow basis, increased by 25% in both the New York State and the ODFAP studies. The OFMAP study recorded a 21% change in this value. Included in machinery expenses are fuel, repairs and machinery depreciation. Machinery cost per cow was approximately the same in all the studies.

Table 26 describes the change in real estate expenses (building repair, taxes, insurance, land rent, etc.) on a per cow basis between 1980 and 1984. The data indicate a 22% increase in real estate cost per cow in the New York State study and a 20% increase in these costs in the ODFAP study and 24% in the OFMAP study. In 1984 New York State real estate costs per cow were $192, with a corresponding cost of $229 found in the OFMAP survey.

Tables 27 and 28 describe interest expense per cow and depreciation expense per cow, respectively. The data indicate a greater increase in interest expenses in the New York State study than in the ODFAP study during the time period 1980 to 1984, but show a substantially larger increase in the OFMAP study, perhaps reflecting the portion of this sample from the F.C.C. files. Ironically, the top one-third of the OFMAP study (selected on the basis of N.F.I.) shows the largest increase in interest expense.

The rate of change for depreciation expense appears to be greater in New York than in Ontario (Table 28). These costs are 10% higher in the OFMAP study than in the New York State study.

Marketing costs, (deductions, commissions, dues, advertising and trucking), on a per cow basis, are shown in Table 29. These data suggest substantial increases in marketing cost in both New York and Ontario (252% vs 108% (ODFAP and 77% (OFMAP)). The rate of increase is less in Ontario, but expenses are higher ($204 N.Y. vs $320 Ont.).

Table 30 describes the total cash cost per cow. The data indicate a slower rate of increase of total cash expense per cow in the ODFAP (26%) study and a higher rate of increase in the OFMAP (43%) study when compared with the New York study (32%). This mixed news for the Ontario industry must be tempered by the fact that output per cow is higher in New York State and has increased at a faster rate (Table 15). Table 31 takes this additional factor into consideration.

Table 31 shows total cash costs on a per-cwt-of-milk-sales basis.

These data show a similar rate of increase in the New York study (22%) and the ODFAP (21%) study while a substantially higher rate of increase is noted in the OFMAP study (40%). Cash costs are considerably less in the New York study than in the Ontario study ($15.88/cwt vs $21.41/cwt).

SUMMARY

The time period of comparison (1980 - 1984) was chosen on the basis of available comparable data. It should be recognized that this time period may not reflect long-term trends within the dairy industries of New York State and Ontario. As such, no inferences concerning long-term trends can be made on the basis of this report. However, given the nature of the differences listed below, a continuation of this study will be undertaken to determine if the trends summarized here are of an ongoing nature. Alternatively, if research funds are available, a report using primary data will be undertaken.

Size factor summary

When factors related to the size of the enterprise are considered, it is apparent that New York State farms, as represented by this study, are growing while Ontario farms are showing no significant growth. New York State farms show a 14% to 31% increase in all the size measurement indicators, while the ODFAP study farms are negative in two of the five size measurement indicators, show no change in the two others and, ironically, show only a substantial increase in the area of total capital investment.

The OFMAP study shows four of the five size indicators at 8% or less and a 46% increase in the value of capital assets.

The only apparent conclusion to draw from this is that while the New York State farms are growing in the number of cows, output and acreage, the Ontario farms are growing in value.

Income factor summary

The years 1980 to 1984 were not a profitable time period for the dairy industry in either New York State or Ontario. The trend in New York State was better than in the ODFAP study in terms of cash receipts, net farm income, N.F.I. as a percent of total cash receipts and rate of return on investment.

Ironically, the only significant income measurement where the ODFAP surveyed trend was higher than the New York State surveyed farms was in the price received per cwt of milk.

A different picture is presented when the OFMAP trends are compared to the New York study. Here, the trend in net income, net income as a percent of total cash income, and milk prices are higher than those found in the New York study. When absolute values for 1984 are considered, the data indicate the OFMAP farms are higher in the following criteria: net farm income, N.F.I. as a percent of cash receipts and price paid for milk. New York shows a higher value for cash receipts, with the rate of return on investment being the same for both surveys.

When absolute average values (1980 to 1984) are used to compare New York and OFMAP we find that New York is higher in net farm income and rate of return on investment, while Ontario has a higher value for net farm income as a percent of cash receipts and price paid for milk.

Rates of production summary

When changes to the rates of production are measured by milk sales per farm and milk sales per cow, the New York State dairy industry has recorded large increases. Conversely, Ontario has recorded small increases in these two important measurements.

In terms of absolute values for these indicators, the New York study farms have a wide productivity advantage over their Ontario counterparts.

Labour efficiency measurements

The study shows a large and growing gap between the efficiency of labour on New York State and Ontario dairy farms. New York State workers produce one-third more milk than their OFMAP surveyed counterparts, and milk approximately one-third more cows per worker.

Capital efficiency summary

All tested measurements of capital efficiency indicate a more efficient use of capital in New York State, and all but one show a growth in this advantage over the Ontario industry.

The tested measurements indicating this trend include capital investment per cow, capital used per cwt of milk sales, capital investment per worker, machinery investment per cow, and real estate investment per cow.

Cost factor summary

The trend, as it relates to cost factors, is not as clear as in the other areas under investigation. For example, New York State has a higher purchased feed cost per cow. When crop expenses per cow are considered, we find New York crop expenses are less per cow and the rate of increase is lower. New York State enjoys a slight advantage over Ontario in the area of machinery cost per cow and real estate expenses per cow, with the rates of increase being very similar in both jurisdictions.

The net effect of the different costs is a total cost structure that is similar in both jurisdictions. New York State dairy farms and Ontario dairy farms have very similar total cash cost per cow and very similar rates of increase in these costs. However, while Ontario is competitive on a per cow basis it must be remembered that substantial cow productivity differences exist, which are reflected in the values for cash cost per cwt. of milk sales. In this area, Ontario is at a significant disadvantage.

CONCLUSION

To the extent that this survey is representative of trends within the dairy industry in New York State and Ontario, it indicates a serious erosion of the competitiveness of the Ontario industry relative to New York State. The results would indicate that New York, with a relatively unregulated industry, is better equipped to make adjustments to changing conditions.

Quite simply, the Ontario industry has not kept pace. Perhaps it does not need to keep pace. On the other hand, the nature of competition in North America may be changing so that the survival of this industry in Ontario requires it to keep pace.

APPENDIX

Table 32 demonstrates the relationship between output per cow, as measured by annual milk sales and the size of the dairy herd in New York State. The table also shows the rate of change in milk sales per cow over this period.

TABLE 1. NUMBER OF COWS IN THE DAIRY HERD

	1980	1981	1982	1983	1984	% change 1980-1984
New York	75	79	82	88	89	19%
ODFAP	44	42	44	43	43	-1%
OFMAP	50	49	48	49	51	2%
OFMAP (top 1/3)	62	61	51	56	58	-6%

TABLE 2. NUMBER OF TILLABLE ACRES

	1980	1981	1982	1983	1984	% change
New York	246	257	262	272	280	14%
ODFAP	228	208	207	192	233	2%
OFMAP	238	236	232	244	258	8%
OFMAP (top 1/3)	277	311	228	283	312	13%

TABLE 3. MILK SALES PER FARM (LB OF MILK)

	1980	1981	1982	1983	1984	% change
New York	1 076 100	1 142 000	1 210 500	1 343 200	1 373 500	28%
ODFAP	522 514	501 983	521 788	508 725	534 807	2%
OFMAP	625 104	626 150	614 022	628 408	649 587	4%
OFMAP (top 1/3)	801 158	786 445	666 193	744 576	785 178	-2%

TABLE 4. NUMBER OF MONTHS OF LABOUR

	1980	1981	1982	1983	1984	% change
New York	32	33	34	36	37	16%
ODFAP	25	24	25	24	24	-5%
OFMAP	26	24	25	26	28	6%
OFMAP (top 1/3)	30	29	25	30	30	0%

TABLE 5. TOTAL CAPITAL INVESTMENTS ($CDN) (MARKET VALUE - DECEMBER 31ST)

	1980	1981	1982	1983	1984	% change
New York	$521 037	$576 403	$617 745	$643 106	$695 865	33%
ODFAP	$498 780	$553 431	$599 257	$651 615	$701 773	41%
OFMAP	$514 017	$576 457	$622 454	$692 627	$752 456	46%
OFMAP (top 1/3)	$626 386	$712 703	$632 514	$842 213	$929 860	48%

TABLE 6. PERCENT CHANGE IN ASSET VALUE 1980-84 (MARKET VALUE)

	Livestock	Feed & Supplies	Machinery	Real Estate	Quota
New York	15%	50%	38%	33%	0%
ODFAP	24%	20%	7%	23%	389%
OFMAP	7%	N/A	3%	25%	341%
OFMAP (top 1/3)	8%	N/A	1%	31%	320%

TABLE 7. TOTAL CASH RECEIPTS ($CDN)

	1980	1981	1982	1983	1984	% change
New York	$182 069	$208 583	$224 360	$249 862	$269 809	48%
ODFAP	$108 618	$114 000	$127 516	$123 142	$134 260	24%
OFMAP	$126 736	$139 573	$149 874	$158 466	$177 390	40%
OFMAP (top 1/3)	$158 475	$177 223	$160 418	$198 679	$228 015	44%

TABLE 8. MILK SALES AS A % OF TOTAL CASH RECEIPTS

	1980	1981	1982	1983	1984
New York	88%	90%	90%	90%	86%
ODFAP	64%	69%	68%	72%	73%
OFMAP	78%*	79%*	78%*	78%*	77%*
OFMAP (top 1/3)	81%*	79%*	80%*	75%*	73%*

*Includes subsidy

TABLE 9. DAIRY CATTLE SALES AS A % OF TOTAL CASH RECEIPTS

	1980	1981	1982	1983	1984
New York	7%	6%	6%	5%	6%
ODFAP	13%	12%	11%	12%	11%
OFMAP	12%	11%	10%	9.2%	9.4%
OFMAP (top 1/3)	12%	11%	10%	9.1%	9.1%

TABLE 10. GOVERNMENT PAYMENTS AS A % OF TOTAL CASH RECEIPTS

	1980	1981	1982	1983	1984
New York	.4%	.3%	.4%	.7%	1.5%
ODFAP	7%	6%	6%	6%	6%
OFMAP			Data are not available.		

TABLE 11. NET FARM INCOME ($CDN)

	1980	1981	1982	1983	1984	% change
New York	$36 391	$30 628	$29 012	$31 815	$25 508	-30%
ODFAP	$42 971	$19 455	$15 167	$12 198	$25 445	-41%
OFMAP	$30 424	$20 970	$17 395	$24 561	$30 148	-1%
OFMAP (top 1/3)	$60 106	$44 754	$40 795	$51 805	$63 344	5%

TABLE 12. N.F.I. AS A % OF TOTAL CASH RECEIPTS

	1980	1981	1982	1983	1984	% change
New York	20%	15%	13%	13%	9%	-11%
ODFAP	40%	40%	12%	10%	19%	-21%
OFMAP	24%	15%	12%	15%	17%	-7%
OFMAP (top 1/3)	38%	25%	25%	26%	26%	-12%

TABLE 13. PRICE PAID PER CWT OF MILK ($CDN)

	1980	1981	1982	1983	1984	% change
New York	$14.97	$16.36	$16.67	$16.78	$17.38	16%
ODFAP	$13.35	$15.22	$16.63	$17.40	$18.30	37%
OFMAP	$15.88*	$17.57*	$18.98*	$19.54*	$21.05*	33%
OFMAP (top 1/3)	$16.01*	$17.82*	$19.34*	$20.06*	$21.05*	31%

*Includes subsidy

TABLE 14. RATE OF RETURN ON INVESTMENT

	1980	1981	1982	1983	1984	% change
New York	7.9%	7.1%	7.2%	7.6%	5.0%	-2.9%
ODFAP	7.5%	3.4%	3.0%	1.9%	3.7%	-3.8%
OFMAP	5.6%	4.8%	3.9%	4.3%	5.6%	0%
OFMAP (top 1/3)	8.8%	7.0%	5.8%	6.3%	8.0%	-8%

TABLE 15. MILK SALES PER COW PER YEAR (LB)

	1980	1981	1982	1983	1984	% change
New York	14 348	14 455	14 762	15 264	15 433	7.5%
ODFAP	11 914	11 650	11 789	11 858	12 380	4.0%
OFMAP	12 502	12 675	12 792	12 943	12 753	2.0%
OFMAP (top 1/3)	12 922	12 893	13 192	13 343	13 595	5.2%

TABLE 16. MILK SOLD PER WORKER (LB) 1980-1984

	1980	1981	1982	1983	1984	% change
New York	403 538 lb	415 273 lb	427 235 lb	447 686 lb	445 941 lb	11%
ODFAP	248 816 lb	250 501 lb	248 460 lb	254 362 lb	267 404 lb	7%
OFMAP	284 138 lb	313 075 lb	292 392 lb	287 378 lb	282 429 lb	-5%
OFMAP (top 1/3)	320 463 lb	327 685 lb	317 235 lb	297 830 lb	314 071 lb	-2%

TABLE 17. COWS PER WORKER 1980 - 1984

	1980	1981	1982	1983	1984	% change
New York	28	28	29	29	29	4%
ODFAP	21	21	21	21	22	5%
OFMAP	23	25	23	22	22	-3%
OFMAP (top 1/3)	25	25	24	22	23	-6%

TABLE 18. CAPITAL INVESTMENT PER COW (MARKET VALUE $CDN)

	1980	1981	1982	1983	1984	% change
New York	$6 946	$7 296	$7 532	$7 307	$7 818	13%
ODFAP	$11 387	$13 177	$13 776	$15 189	$16 244	43%
OFMAP	$10 280	$11 669	12 968	$14 135	$14 754	43%
OFMAP (top 1/3)	$10 103	$11 684	$12 524	$15 040	$16 032	59%

TABLE 19. CAPITAL USED PER CWT OF MILK SALES ($CDN)

	1980	1981	1982	1983	1984	% change
New York	$48.41	$50.47	$51.03	$47.88	$50.66	5%
ODFAP	$95.46	$110.41	$114.87	$128.09	$131.22	39%
OFMAP	$82.22	$92.06	$101.37	$110.00	$116.00	41%
OFMAP (top 1/3)	$78.18	$90.62	$94.94	$113.11	$118.00	51%

TABLE 20. CAPITAL INVESTMENT PER WORKER ($CDN)

	1980	1981	1982	1983	1984	% change
New York	$195 879	$209 601	$218 284	$214 368	$225 930	15%
ODFAP	$237 514	$276 716	$285 360	$325 808	$350 887	48%
OFMAP	$233 644	$288 229	$296 407	$314 830	$327 155	40%
OFMAP (top 1/3)	$250 554	$296 960	$301 197	$336 885	$371 944	48%

TABLE 21. MACHINERY INVESTMENT/COW ($CDN)

	1980	1981	1982	1983	1984	% change
New York	$1218	$1323	$1360	$1320	$1410	16%
ODFAP	$2123	$2073	$2154	$2179	$2220	5%
OFMAP	$2044	$2110	$2108	$2145	$2067	1%
OFMAP (top 1/3)	$2112	$2071	$2083	$2366	$2280	8%

TABLE 22. REAL ESTATE INVESTMENT PER COW ($CDN)

	1980	1981	1982	1983	1984	% change
New York	$3122	$3308	$3445	$3392	$3642	17%
ODFAP	$5264	$6102	$6166	$6302	$6258	19%
OFMAP	$5064	$5796	$6100	$5984	$6226	19%
OFMAP (top 1/3)	$4841	$5773	$5788	$6414	$6779	40%

TABLE 23. FEED PURCHASES PER COW

	1980	1981	1982	1983	1984	% change
New York	$604	$627	$619	$674	$688	14%
ODFAP	$303	$340	$330	$330	$334	10%
OFMAP	$379	$396	$383	$424	$456	20%
OFMAP (top 1/3)	$341	$351	$382	$399	$458	34%

TABLE 24. CROP EXPENSES PER COW

	1980	1981	1982	1983	1984	% change
New York	$201	$221	$226	$212	$236	17%
ODFAP	$225	$220	$257	$230	$297	32%
OFMAP	$248	$293	$321	$300	$345	39%
OFMAP (top 1/3)	$238	$303	$313	$331	$342	44%

TABLE 25. MACHINERY EXPENSES PER COW

	1980	1981	1982	1983	1984	% change
New York	$387	$437	$457	$435	$483	25%
ODFAP	$371	$383	$459	$422	$463	25%
OFMAP	$383	$415	$470	$459	$462	21%
OFMAP (top 1/3)	$377	$414	$419	$486	$506	34%

TABLE 26. REAL ESTATE EXPENSES PER COW

	1980	1981	1982	1983	1984	% change
New York	$158	$172	$185	$156	$192	22%
ODFAP	$205	$226	$274	$240	$246	20%
OFMAP	$185	$191	$245	$223	$229	24%
OFMAP (top 1/3)	$181	$175	$205	$214	$223	23%

TABLE 27. INTEREST EXPENSE PER COW

	1980	1981	1982	1983	1984	% change
New York	$195	$247	$280	$263	$277	42%
ODFAP	$232	$289	$341	$260	$308	33%
OFMAP	$242	$356	$375	$347	$491	102%
OFMAP (top 1/3)	$161	$284	$237	$258	$390	142%

TABLE 28. DEPRECIATION EXPENSE PER COW

	1980	1981	1982	1983	1984	% change
New York	$238	$269	$290	$238	$293	38%
ODFAP	$264	$269	$292	$282	$304	15%
OFMAP	$361	$334	$326	$317	$325	-10%
OFMAP (top 1/3)	$315	$313	$330	$342	$350	11%

TABLE 29. MARKETING EXPENSES PER COW

	1980	1981	1982	1983	1984	% change
New York	$ 58	$ 69	$ 91	$174	$204	252%
ODFAP	$154	$191	$238	$313	$321	108%
OFMAP	$181	$207	$267	$304	$320	77%
OFMAP (top 1/3)	$189	$202	$290	$319	$332	76%

TABLE 30. TOTAL CASH COST PER COW

	1980	1981	1982	1983	1984	% change
New York	$1867	$2077	$2192	$2290	$2458	32%
ODFAP	$1843	$2086	$2216	$2185	$2321	26%
OFMAP	$1909	$2184	$2427	$2470	$2728	43%
OFMAP (top 1/3)	$1735	$2067	$2059	$2404	$2795	61%

TABLE 31. TOTAL CASH COST PER CWT OF MILK SALES

	1980	1981	1982	1983	1984	% change
New York	$13.01	$14.36	$14.84	$15.00	$15.88	22%
ODFAP	$15.47	$17.91	$19.65	$18.43	$18.75	21%
OFMAP	$15.26	$17.23	$18.97	$19.22	$21.41	40%
OFMAP (top 1/3)	$13.42	$16.04	$15.60	$18.08	$20.65	54%

TABLE 32

Number of cows in the Herd	Annual Milk Sales/Cow (lbs)					
	1980	1981	1982	1983	1984	% change
< 40	13 000	13 518	12 944	12 965	13 424	3%
40 to 54	14 200	13 926	14 055	14 804	14 143	-.4%
55 to 69	14 600	14 603	15 228	14 894	15 080	3%
70 to 84	14 600	14 387	14 796	15 158	15 057	3%
85 to 99	14 000	14 599	14 480	15 284	15 378	10%
100 to 149	14 700	14 908	14 612	14 931	15 149	3%
150 to 199	14 300	13 954	14 960	15 201	15 018	5%
200 to 249	14 100	15 155	15 061	15 729	16 125	14%
250 +	14 800	14 966	16 167	16 948	17 403	18%

HORTICULTURE AND SPECIAL CROPS SESSION

The tree fruit and grape industry

John Smith

INTRODUCTION

It is a challenge to discuss the Canadian Tree Fruit and Grape Industry in the time allotted here today. Others have faced similar challenges in the past, and have provided excellent overviews of the commodities. I hope I will do as well.

The scope of my presentation this morning will include apples, pears, peaches, plums, sweet and sour cherries, and grapes. In preparation of this discussion, representatives from each of the areas involved in the production of the named commodities have been contacted for their views.

The past growing season was one of challenge in all parts of the country. The Okanagan Valley experienced extremely cold temperatures in November 1985, which impacted on 1986 production. A mild winter in the fruit areas of Ontario was followed by an early spring and the inherent risks associated with that situation. Similar conditions occurred in the Province of Quebec and in the Annapolis Valley. There was a somewhat reduced crop in the Okanagan Valley as a result of bud injury occurring during the winter time, significant reduction in the volume of apples produced in Ontario, Quebec and Nova Scotia as a result of spring frosts and a sharp decline in the sour cherry crop in Ontario for the same reason.

An early spring in eastern Canada was followed by a summer of above normal rainfall and below normal sunshine. Some of the fruit growing areas of Canada received excessive rainfall during the harvest season impacting negatively on quality and yield.

As always, our industry is influenced by events occurring beyond our borders. The Washington apple industry continues to expand and in 1986, experienced another large crop. The Central and Eastern production areas of the U.S., on the other hand, generally experienced the weather related production challenges that occurred north of the border while in the south-eastern U.S., peach growing areas, extreme drought may have had both a positive and negative effect on the marketing of Ontario peaches. Similarly, the exchange rate continues to provide marketing advantages and cost of production disadvantages, and in any case, is beyond the control of the primary producer.

In a general sense, it appears that inventories of processed product in the United States and Canada may be somewhat below historical levels. This seems to be the case with California peaches, Eastern U.S. labrusca sourced grape products and apple juice. Sour cherry inventories remain high. Providing these assumptions are correct and with the exception of sour cherries, the marketing outlook for 1987 should be positive.

APPLES

The Apple Crop in eastern Canada was down considerably from that of 1985, while the B.C. crop was near the 1985 level. The same pattern generally held true south of the border with the Great Lake States producing less than normal and the western states, particularly Washington, having a good crop. The cold winter in the west did not appear to adversely affect the production potential of the apples in that region, while the combination of the early spring and, consequently, early bud development, followed by significant frosts resulted in the considerable crop reduction throughout the east.

There were local variations and varietal differences in the response to the spring weather. The general effect was a significantly reduced apple crop.

The apple market is considered positive throughout the country including the west, with local and domestic markets very good. B.C. reports good movement to the U.K. and the Far East with the principal export varieties being spartan and red delicious. Sales to the eastern Canadian markets and U.S. are starting now and appear promising. B.C. reports storage quality normal, and pack-out to date shows a good percentage of extra fancy with generally large fruit size.

The Ontario situation appears equally positive for apples available for market. Frost at bloom time significantly reduced the crop in eastern Ontario. Quality of the crop in the remainder of the province is good, but deteriorated somewhat with prolonged cloudy, wet weather during harvest. Prices have been satisfactory to this point. Storage holdings indicate a surprising quantity of apples in storage at this time in light of the reduced volume and the active fresh market. Apples for juice appear to be in limited supply.

The Quebec crop was affected by spring frosts and has come up very short. Movement is strong to the fresh market, with an anticipated significant shortfall for the juice market.

New Brunswick escaped the spring frost problems of their eastern Canadian peers and have harvested a crop only slightly below that of 1985. Quality of the New Brunswick crop has been excellent and the market strong. Grower returns will be up.

The Annapolis Valley crops proved to be light with something in the neighbourhood of 50% to 60% of the previous year's crop. Wet weather during much of the spring and early summer provided a challenge for disease control. Markets appear strong and the juice market is likely to be short.

The apple outlook is greatly dependent on the weather and on production in competing areas and is therefore uncertain. Stocks on hand going into the 1987 harvest season are expected to be below normal indicating some reason for optimism for the 1987 crop. B.C., Ontario and Quebec are in an expansion phase of the industry with new plantings exceeding removals and with the potential for increased production. The same is true to a smaller extent for New Brunswick and Nova Scotia, leading to further concerns regarding the potential of overproduction a few years down the road.

The Alar issue remains a concern to the industry while generally improved storage facilities and a continuing improvement in the variety mix are positive factors for the future. The Province of Ontario is currently conducting the Tree Fruit and Vine Census, a project which occurs every five years. This will provide new and, I am sure, useful information on that sector of the industry when the survey is completed and published.

PEACHES

The two peach producing provinces showed declines in production in 1986 compared to 1985 production, with the B.C. situation probably due to winter injury and adverse weather during pollination. The Ontario decline was attributable directly to the severe hail storm on August 1st in which approximately one-third of the unharvested crop was ruined.

For B.C., there was some tree damage as a result of winter weather and some of these trees will require replacements. Ontario was coming off the biggest fresh market crop in history and was heading for an even bigger crop in 1986, prior to the above-mentioned hail storm. New plantings of high density orchards, many with improved underdrainage and some with trickle irrigation have increased the production capacity of the Peninsula. Some peaches were moved from Ontario into the non-traditional U.S. markets and significant quantities were shipped into the Prairie Provinces to fill openings created by the small B.C. crop.

The processing sector in B.C. is in a depressed state, while the tonnage marketed for processing in Ontario declined from 7000 to 5500.

Plantings continue in Ontario and in some cases on land, formerly considered marginal for peaches. Judicious use of tile drainage and irrigation have altered the thinking on some of these marginal soils. The 1986 Tree Fruit Census will provide an update on tree inventory and it is expected to show a marked increase. Plantings of clingstones in Ontario have been substantial up to and including 1985 with a significant decline in numbers of 1986 due largely to availability of trees. Tree availability is expected to improve in 1987 and be up substantially in 1988 as the emphasis on increased production continues.

PEARS

The British Columbia crop was 47% off normal, due largely to inclement weather during bloom. There is little optimism in the B.C. industry for a resurgence of the processing sector. Anjou pears in B.C. were at 81% with quality good and prices excellent.

In Ontario, the volume of pears sold on the fresh market increased sharply from 2500 tons to 4000 tons and the quantity sold to the processors increased by approximately 10%. There seems to be good potential for increasing the volume of pears sold on the fresh market in Ontario as short term and medium term storage is "fine tuned". The removal of large acreages of the Kieffer variety have influenced the current pear production patterns with acreages formerly devoted to the Kieffer variety being replanted in some instances to Bartlett and Bosc. Pears, like peaches, are under extensive pressure from imports. This is not likely to change.

Inventory of processed product is down and should bode well for sales in 1987.

OTHER TREE FRUIT

The national production of apricots and sweet cherries was generally down, with the B.C. apricot crop being off by 25%. The B.C. cherry crop reduced from 405 000 lugs to 105 000 and the prunes in B.C. were down as well, to less than one-half of 1985.

Ontario's sour cherry crop was 60% off normal following a frost in late April. Potential production for this crop continues to increase gradually as new plantings come on stream. The Ontario sour cherry industry is influenced in a large measure by the U.S. tart cherry industry in the Great Lake States. Sharply increased production potential, static markets and the loss of the U.S. cherry market order are likely to have negative influences on the Ontario tart cherry industry.

There seems to be considerable interest in expansion of the sour cherry industry in B.C. with the prospects for up to a 2000-ton capacity in the near future.

In Ontario, on the other hand, production was about on a par with that of 1985 on sweet cherries and as up significantly on all plums and prunes. Significant new plantings of plum and prune trees in Ontario may well increase the production, but complicate an already delicate market situation.

GRAPES

The grape industry continues to experience difficult times in Ontario and British Columbia. A reduced crop in British Columbia and improved wine sales in that Province offer some reason for optimism, while in Ontario, the second very large crop in three years has resulted in another substantial surplus. Wine sales, which declined sharply from mid-1983 to May 1986, have shown little signs of improvement.

Massive re-plantings for improved varieties have left the grower with a more expensive surplus than experienced in the past, when surpluses were predominantly of the Labrusca varieties.

The grape and wine industries of the two provinces primarily concerned are suffering from the continuation of the expansion of imports into the domestic markets and there seems little reason for optimism that this trend will change in the immediate future. Some progress has been made in the Ontario situation, with expansion of sales of Labrusca types to non-traditional juice markets and a major processor of grapes for the consumer market in Ontario has now diversified to the bulk juice market. This has proved positive for the growers of those grapes as there were no surpluses in the traditional juice varieties. It is hoped that this trend will continue.

New product development has resulted in the introduction of a sparkling grape drink and it is hoped that there will soon be a sparkling grape juice produced and bottled domestically.

SUMMARY

There was some downturn in production of many tree fruits in 1986 from the big crops of 1985. The B.C. tree fruit industry was negatively impacted by severe winter temperatures and pollination difficulties. Apples in Ontario, Quebec and Nova Scotia were down primarily due to spring frosts. Sour cherries in Ontario were similarly reduced.

Large crops of grapes, peaches, plums and pears were reported from Ontario, in spite of one of the most damaging hail storms in memory. In spite of these temporary weather-related set-backs in various parts of the country, the potential to produce tree fruits and vine crops in this country seems to be greater than ever.

Our markets continue to be looked upon favourably by exporters and our traditional export markets continue to be under pressure from other foreign suppliers. The challenges to this sector of the horticultural industry continue to be substantial, and in the short term, the exchange rate has been positive. Much remains to be done in the area of quality control in the orchard and packing shed, along with continued attention to packaging and post-harvest handling of all commodities.

The viability of the processing sector seems to vary somewhat from area to area and commodity to commodity with the juice sector perhaps appearing stronger than in recent years. The industry continues to be vulnerable to over-production in other areas and this country's inability to apply proper safeguards to unfair trading practices.

Vegetable outlook

Doug Flook

This past year has been one of extreme pressure in terms of prices to producers, downward trends in contracted acreage and poor weather conditions resulting in further decreases in production levels of many major processing vegetable crops across Canada. The eastern provinces of Ontario, Quebec and Nova Scotia experienced extremely poor weather conditions mainly due to record-breaking rainfalls creating some delay in growth and considerable increases in bypassed acreages of green and wax beans, peas and sweet corn. Western Canada did not experience such a loss and overall did not experience the same frustration due to weather problems. On average both Alberta and British Columbia vegetable producers reported a good year in terms of production and quality.

There was a drastic downturn of events in prices paid to processing vegetable producers across Canada in 1986. Prices for some crops were maintained at 1985 levels; however, the majority had decreases of anywhere from 1/2% for processing cucumbers in Ontario to an extreme of 11 1/2% for sweet corn in British Columbia.

In terms of vegetable crop utilization, we find that mid-year inventories of major frozen and canned vegetables had declined slightly from those of the previous year. Major canned vegetable stocks had decreased by approximately 12%. Most of this decrease is accounted for in canned tomatoes and tomato juice; however, it should be pointed out that remaining stocks are still considerably higher than normal.

It is anticipated that we will see an overall increase in imports in 1986 due to shortfall in some crops.

Of increasing concern to the processing vegetable industry is the impact of the prices of grain corn and soya beans as possible alternative opportunities. It should be noted, however, that producers of these commodities have a choice as to whether to forward sell their crop at existing prices or defer pricing their crop in expectation of improved future market prices. In addition, both of these commodities are covered by federal and provincial stabilization programs.

ASPARAGUS

Pertaining to specific crops, Ontario is the largest asparagus producing province, and production increased 27% in 1986, which allowed the board to fulfill 98% of requirements and also make trial shipments to Quebec. Prices in 1986 were maintained at last year's level. It is anticipated that grower acreage will increase substantially for 1987, and prices may see a moderate increase. Sales to processors have increased 150% over the last three years, and it is anticipated that this market will be maintained.

TOMATOES

Ontario is also the largest producer of tomatoes for processing in Canada. Contract tomato tonnage increased approximately 3% in 1986; however, this followed a dramatic *decrease* of 15% from that of the previous year. In spite of the frustration created by the weather, the total harvest was slightly above contract at 539 080 tons. Overall quality of the crop was good. Prices in 1986 were reduced $1.50 per ton, and new to the industry was an export development price incentive program. High inventories and competition from overseas markets continue to impact on price and volume requirements.

Tomatoes for processing are increasingly viewed as a global commodity which calls for an assessment of world production.

The U.S. crop in 1986 reached a total of 7.4 million tons. In spite of increased production, total U.S. supply is not out of balance. Present indications are that 1987 will be a difficult negotiating period, with many canners seeking to reduce raw product costs.

Mediterranean producing countries have reported a 35 to 40% shortfall in crop for 1986. This may allow a better market situation in the near future since it is estimated that by July 1987, all surplus supplies should be totally exhausted if consumption is maintained at last year's rates.

The growing and processing of tomatoes is seriously threatened by foreign competition. Imported tomato products are often produced and exported with the aid of government subsidies. These competitive pressures have eroded the domestic industry's share of the market. If this important industry is to be maintained, both the U.S. and Canadian governments must assure that they receive reasonable protection from foreign subsidized and low cost competition.

GREEN PEAS

On average, prices to producers for green peas in Canada decreased almost 3% in 1986. Heavy stocks of green peas will likely diminish somewhat with cutbacks in acreage that occurred prior to planting along with substantial decreases in production levels.

Evidence of this is seen in Ontario by an almost 30% decrease in contracted acreage and a further decrease of 10% in harvested acreage.

GREEN AND WAX BEANS

Green and wax bean prices decreased an average of 4% across Canada. Early estimates are that production will be slightly below last year's level. Inventories of canned green and wax beans were up 30% at mid-year and frozen green and wax beans were up 31%. Imports over the same period were down 9% while exports increased 41% over those of last year. Supplies may decrease substantially if present trends continue with anticipated increases for growers in terms of price and acreage.

SWEET CORN

Sweet corn prices across Canada took the most drastic decrease at an average of 7 1/2% below those of 1985.

A lower pack of sweet corn in 1986 will result from a decrease in contracted acreage as well as a decrease in harvested production. At mid-year, inventory levels of cream style corn had decreased 39% compared to those of the previous year. Canned whole kernel had also decreased slightly over the same period. With major shortfalls also experienced in Israel and the U.S., tonnage is likely to be very tight in the canned sector by year end.

Canadian processors report that frozen production was "quite close to budget pack".

For the first year, British Columbia growers negotiated a price for sweet corn export in an attempt to increase grower acreage. However, it is reported that only a very small portion of the crop was exported. Quebec continues its consumer promotion program for canned peas, corn and green and wax beans and reports that, in its opinion, this program has helped to maintain present market.

The benefits of additional research and promotional programs directed at the export corn market is presently being reviewed by a steering committee composed of grower and processor representatives from Quebec and Ontario.

CUCUMBERS

Ontario and Quebec are the major cucumber producing provinces in Canada. Grower prices in 1986 were maintained at 1985 levels in Quebec while the price to Ontario growers decreased by 1/2%. Quebec reached approximately 80% of production while Ontario's production was 4% above contract. Quebec reports that acreage contracts to growers may increase 5% in 1987; however, this is still below normal levels. Ontario anticipates that tonnage may decrease slightly due to the announcement that E.D. Smith & Sons will not be contracting in 1987.

POTATOES

Preliminary information in this season's potato crops in North America indicates an overall shortfall. In Canada, wet weather was reported to have affected the 1986 production. In Ontario approximately 3000 acres of processed potatoes were lost; however, yields were quite high, which helped maintain production levels to some extent. On December 10th, 1/2 million cwt of potatoes, presently in storage, are being assessed as to their suitability for harvest.

Processed tonnage is down in the U.S. – reflected in October 1 holdings running 10% down from those of last year.

We may see a slight increase in processing acreage in 1987, with firmer market conditions being forecast.

OTHER CROPS

With the exception of cabbage for processing where processors' contract requirements decreased slightly, the remaining processing crops under an organized marketing system of beets, carrots, cauliflower, lima beans, peppers, pumpkin and squash all showed slight increases in contract for 1986. It is anticipated that these acreages will be maintained or increased for 1987 since it appears that this year's pack will not be met.

SUMMARY

In summary, the outlook for 1987 may appear on the surface to be advantageous for growers with decreased inventories which may strengthen conditions in the marketplace for most crops.

However, when one considers the situation which exists for the industry in terms of lower prices that existed in 1986 in addition to the competitive nature of alternative crop opportunities, low priced imports, high costs of production, and processors seeking to further decrease raw product costs, there is little doubt that we are looking ahead to a year of high-pressured negotiations across Canada.

Nursery crop outlook for 1987 and beyond

Stan Kochanoff

Mr. Chairman, Outlook conference participants, Ladies and Gentlemen:

On behalf of the Canadian Nursery Trades Association representing this country's nursery – landscape industry, I'd like to express our appreciation for this opportunity to make a presentation at this year's Agricultural Outlook Conference.

The Canadian Nursery Trades Association represents nursery retailers, garden centres, wholesale growers, sod producers and those in the landscape construction and maintenance trades. These are the people who day in and day out seek to improve our living environment with plants both outdoors and indoors. What kind of a world would you and I enjoy if we couldn't have the benefit or ornamental plants, namely, trees, shrubs, groundcovers, fruit trees and indoor green plants?

Not only do plants aesthetically improve our life style, they purify the air we breathe, by removing C02 and providing oxygen, filter the air from dust and pollutants, baffle and screen unwanted sounds and sights and help to prevent erosion. Nursery plants contribute to the "edible landscape" that we all enjoy.

This year the Nursery Trades in combination with the greenhouse industry from one of the largest horticultural commodity groups in Canada with over 492 million in farm gate sales. The green industry in total extending to the retail and service level is in excess of 500 million here in Canada in 1986.

So you can see, the plants we generally take for granted on a day-to-day basis should not be taken lightly. The impact on this country's agricultural economy is quite considerable not only in dollars but in the numbers of people employed. While many agricultural commodities have been able to mechanize and make significant reductions in labour, the nursery industry remains highly labour intensive.

The over-all North American economic situation has contributed largely to the growth in the Canadian nursery industry over the past two years. The situation in 1985 and 1986 contributes significantly to the nursery outlook for 1987 and beyond. First of all a 20% increase in housing starts from 1984 to 1985 from 136 000 to 165 000 and to 181 000 in 1986 has dramatically increased the demand for nursery stock over the past two years marking a strong comeback in the nursery industry since the early 1980s and the recession years. In 1987, housing starts are expected to tail off slightly to 176 000. In 1986 a combination of factors resulted in a limited availability of plant material in the domestic market:

1. With a significant increase in U.S. housing starts, the American domestic demand for nursery stock increased and thereby reduced flow of export material to Canada.
2. Canadian growers had reduced growing space during the recession years of 1981-1983.
3. In 1985, 20%-25% of British Columbia's nursery stock was destroyed by frost. British Columbia is Canada's second largest regional producer of nursery stock.
4. In the Maritime provinces, Juniper blight caused considerable loss of both imported and locally growing material.
5. Excessive winter-kill occurring in the southern U.S. caused material from northern states to flow southwards instead of northwards.
6. A summer drought in the southern U.S. devastated small plants and stunted growth of larger plant material which limited U.S. nursery stock supplies.
7. There was extensive winter damage to roses in the American mid-west.
8. For the second year in a row, frost damage destroyed a portion of the Netherlands plant material, especially rose bushes.
9. Imports from quarantined regions in north-eastern U.S. have been restricted due to removal from market of a chemical used to control soil borne pests.

With shortages of nursery stock forecast over the next two years, the USDA reports that southern farmers have shown the most interest in planting trees on land set aside under a federal conservation reserve program. The USDA would like to eventually remove up to 45 million acres of highly erodible cropland out of production for ten years and place it in permanent cover crops such as grasses or trees. Approximately 5 million acres may be planted out in trees.

IMPORT – EXPORT SITUATION

In 1985 imports of rose bushes, trees, fruit trees, plants and cuttings for production and resale totalled 61.4 million showing an increase of 11% over those of the previous year.

While the quantity of rose bushes imported into Canada decreased by 6% in 1985, actual value rose by 13% to 5 million dollars. In contrast with the previous year, the imports of fruit and nut trees, plants and cuttings were down 30% from 1984 levels in 1985.

The U.S. provided 52% of imported material while the Netherlands supplied 48%.

Total industry imports as of September 1, 1986 were up 9% as compared to the corresponding period in 1985. As of September 1, 1986 Canadian cumulative imports of roses and fruit trees were down 3% and 13% respectively from those of 1985. Conversely, imports of ornamental trees including stocks, plants and cuttings increased by 11% over those of previous year.

Cumulative export sales of small fruit trees were up 17% and ornamental nursery stock up only 2% to September 1, 1986 compared with those over the corresponding period last year.

As of September 1, 1986 sales to U.S. were up 35%.

In general, the Canadian market was faced with a tight supply situation. Retailers and landscapers scrambled to source required plant material. In central Canada the value of nursery stock sold is expected to be up 7%. Prices are up approximately 10% from 1985 levels. Generally total sales for both fall and spring season are expected to increase significantly from those of the previous year. Producers report increased planting of 10% for 1985 and 1986.

In British Columbia, growers are reporting sales are up a phenomenal 20%. There were adequate supplies of plants throughout B.C., with the exception of a few selected items.

OUTLOOK

Across the country, total farm gate sales are expected to show a significant increase in 1987 but it would appear that price increases will represent a large part of the sales increase. A 30% Canadian tariff announced by Finance Minister Michael Wilson on June 6, 1986 on certain U.S. grown trees will have an impact on the domestic sector for the next 2 1/2 years. The extent of this impact will depend upon whether importers adjust buying practices to import younger stock for growing purposes or source more product domestically.

The Canadian Nursery Trades Association unanimously adopted a resolution supporting the principle of "free trade" for the nursery industry last July in Calgary, Alberta at their national board of directors meeting. A letter to the Finance Minister in support of free trade and stated opposition to the 30% tariff announcement has been acknowledged by the Hon. Michael Wilson.

Currently, the C.N.T.A. is seeking clarification from Revenue Canada regarding the interpretation of this tariff and its impact on industry members. An announcement will be made to C.N.T.A. members shortly following a meeting with Revenue Canada officials here in Ottawa.

The C.N.T.A. along with Flowers Canada and the C.O.P.F. (Canadian Ornamental Plant Foundation) are hopeful that the present federal government is still committed to bring in the Plant Breeders Rights Bill which will give the plant industry an incentive to breed and improve new varieties of plants here in Canada.

REGIONAL OUTLOOK

In general, product prices will increase in the short run as the period of adjustment occurs. At the same time Canadian growers will be hesitant to grow some varieties affected by the tariff, which is to be temporary. This will affect the availability of certain varieties which generally are not grown in Canada due to the quality of their growth performance in northern conditions.

In 1987, the volume of sales in Ontario will remain relatively static due to tight supplies. Increases will be largely the result of price increases in the neighbourhood of 5%-10%. This is on the back of an across-the-board 10% increase in nursery stock supplies in 1986. In 1987, price increases will slow to 3%-5%.

In 1987, the supply of plant material will remain relatively tight, while supplies in 1988 should increase.

On the west coast in B.C., the growers project that sales for 1986 will probably increase as the volume of nursery stock sold this fall is expected to be up significantly. Farm gate prices are expected to be up 8%-12% in 1986 and up 5% in 1987. In 1988, prices are expected to be up marginally over those of 1987.

With marginal production increase by B.C. growers in 1987, there should be adequate supplies to meet the increasing demand.

On the prairies, total sales of nursery stock are expected to be up 5% in 1986 over 1985 levels. Increased prices appear to account for a very significant portion of the sales increase in 1986.

The Conference Board reports that the 1985 recovery of Alberta housing starts appears to have been short lived. In 1986-87, housing starts are expected to fall again which will have a negative impact on nursery sales in 1987 and 1988. The drop in housing impact may be somewhat lessened by the economic benefits generated by the 1988 Winter Games in Calgary. Many of the new construction facilities will require extensive landscaping and environmental improvements.

Manitoba is expected to enjoy strong economic growth in 1986-87. The conference board reports that Manitoba will probably emerge as a leader among the provinces' economies in 1987. Manitobians are reported to be very confident in their financial future and the Limestone hydro-electric project appears to be a major economic impactor in the construction sector.

Sales of nursery products will increase 5%-10% in 1987 over those of the past year.

In the Maritimes, New Brunswick appears to have the strongest potential for 1987. Construction activity is expected to recover from the sluggish condition of 1986 due to increased capital spending in non-residential construction. During the past year, primary industry utilities and commercial service sectors provided strong momentum in economic growth although offset by weakness in the manufacturing, construction and public sector.

In Nova Scotia, construction activity is expected to fall due to curtailment in offshore oil and gas activities. Residential housing and condominium projects reaching saturation point, reduction is expected in 1987. Over-all Nova Scotia growth should be somewhat weaker in 1987, but the metro Halifax - Dartmouth area should continue to lead the Atlantic area in economic development. The Conference Board suggests that a low personal savings rate in 1985 and weak income gains will limit increases in Nova Scotia growth for 1986-87.

P.E.I.'s economy in 1986-87 should be somewhat weaker according to the Conference Board of Canada. Agriculture is forecast is to fall in 1986 and stagnate in 1987. The tourist industry is experiencing moderate increases due to slow income gains. The public sector is influenced by restraint programs. The key to the Island's economic success appears to be in the maintenance of a strong fisheries sector.

In Quebec, the economic expansion currently underway will continue but at a slower rate. Consumer spending will increase at a healthy pace, construction will continue its recovery and the over-all domestic demand for goods and services will be strong in 1986-87.

In general, the prospects for 1987 and beyond for the nursery industry look promising for continuing growth. Together with the greenhouse and floriculture producers, the nursery industry feels confident we shall continue to be one of the leading horticultural sectors in the agricultural community.

Thank you for the opportunity to present our Outlook.

How competitive is Canadian horticulture

H. Vander Pol

The real question that begs to be answered is "How competitive do we *want* the Canadian horticultural sector to be?", and, supplementary to that, "How competitive do our governments; who presumably reflect the needs of our society, want our industry to be?", because quite frankly without a clear and unequivocal answer to this question the rest of today's exercise could well be redundant. However, inasmuch as I was asked to address the title of this presentation, let me begin with a little philosophy of competition.

One of the foundations of our Canadian society has been the economic principle that the competitive market system is the most efficient and effective means of distributing wealth, wealth which obviously can be manifested in many ways. Those that were able to do something better for less were to be the beneficiaries of this innovative behavior and would subsequently stand to accrue the benefits, whether it be producing potatoes, computers or automobiles. Unfortunately, over time some rather formidable distortions have crept into the system, largely as the result of external influences precipitated by two types of actions, (1) governmental, and (2) collusion on the part of market participants.

Both of these actions have the effect of distorting the impact of the variables that make up the packages offered in the market place. Let me explain: a tariff on imports allows a domestic producer to price his product at a level different from what he might have, had that tariff not been in place. Similarly, if he is faced with a tariff on a commodity he wishes to export he must price at a level that allows him entry into the foreign market at a price below what his domestic competitor can achieve out of the market. Subsidies distort real prices in a similar fashion. The same can be said for the actions of monopolies or oligopolies irrespective of whether they are voluntary of government controlled and supervised.

How then can we extricate ourselves from this morass of external interference in the market place so that we as a Canadian industry might survive and prosper?

The very first thing we must do is look within ourselves and come to grips with whether we want to compete, then we must get our priorities straight. Do we focus on competition and risk short term survival for long term gain or do we risk long term gain for short term survival? To put a slightly different perspective on it, are we, as an industry, truly risk takers (being in agriculture should indicate that we are) or are we risk averters. Unfortunately, from an industry perspective this question can only be answered by the individual. For purposes of this presentation, let's assume we are risk takers and are prepared to play in a truly competitive world market, can we survive in the short term?

First of all this requires some analysis of a competitive world market, and suffice it to say that at the moment no such animal exists. I don't know of a product produced in horticulture anywhere that hasn't been influenced somewhere in its production process by external, non-market driven influences; external in the sense of artificial production or marketing costs as a result of governmental actions. This external influence is so pervasive that in the short term it will be impossible to make a truly definitive statement on our competitiveness; however, this ought not to cloud our commitment to a competitive horticultural industry. What this ought to do is alert us to where to focus our efforts and this leads to the next topic I would like to address briefly.

ENHANCING OUR RELATIVE COMPETITIVENESS

An industry's competitiveness is the result of its ability to develop a recipe of inputs in such a fashion as to produce a product that is presentable in a manner so that (1) it is perceived to be of superior value to the purchaser, and (2) it will extract from the market a price that will allow the production and marketing chain profits that are commensurate with the risks it has taken.

Historically, at least, this recipe included only those things described in "Economics 100" as inputs (for example physical assets, financial assets, and human assets). Today, however, we must include in the real world market political assets, political both in a governmental and an industry sense. We cannot ignore this integral component of the input mix even though we might like to. As a matter of fact, in many instances around the world the political involvement has manifested itself as the "market". Before we look at what we might do as Canadians, we must look at where we stand with regard to the competitive nature of our inputs. How do these inputs, their availability, their quality and their price stack up in general? At this juncture it is probably inappropriate and perhaps impossible to deal with them in any other fashion.

NATURAL RESOURCES AVAILABLE TO CANADIAN HORTICULTURE

Land

We have sufficient, in fact, substantial surplus quantities of land suitable for horticultural production from a soil type and drainage point of view.

Water

Canada has virtually unlimited fresh water resources.

Energy

Our single most limiting horticultural production input parameter is the lack of sufficient, year-round solar energy for most crops.

Fossil energy for environmentally controlled production could be world price competitive if we were not subject to governmental interference in that market.

Financial resources

Canadian capital markets are not large enough to be fully world competitive; however, this constraint is becoming less of a problem as world currencies flow more and more freely across borders.

Human resources

Canadian horticultural labor is not productively competitive with that which is available to our competitors. The two underlying reasons relate to our social welfare structure first and foremost, and secondly to our inability as an industry to accrue the economies of scale required and the year-round production required to achieve greater utilization of the labor resources available.

The same assessment can be made about much of Canadian management resources; however, there are significant exceptions to this as there are to the general lack of productivity of labor and it is these exceptions that provide an opportunity for horticulture in its quest for a competitive advantage.

Regulatory resources

The most significant short term regulatory resource available to Canadian horticulture that is helping it sustain itself is probably the mechanisms that prevent or at least minimize full access by external suppliers to our domestic markets. These mechanisms come in many forms and their significance cannot be overlooked; however, they also represent the single most important impediment to achieving true competitiveness because they provide a degree of artificial comfort that in the long term will not be in the best interest of either the productive or consumptive components of our industry.

THE COMPETITIVE PRODUCTIVE UNIT

Canada's horticultural industry has a long history: a history sprinkled with both successes and failures, each of which should be a lesson for us, and we ought not to lose sight of these messages. However, we are in an ever-changing environment and must not place all our trust in history. What must evolve is a *collective* commitment that our national objective is to have a competitive horticultural sector within agriculture, and within our economy as a whole and this means a *truly* competitive industry. For purposes of this paper I would suggest the following as a possible definition of truly competitive: "A truly competitive horticultural industry is one that competes for its markets on the basis of production and marketing costs without the external influences of the non-traditional forces (i.e., government interference, both domestic and foreign)."

An industry such as defined above is probably unachievable inasmuch as governmental influences have become and will continue to be a fact of life. However, we should collectively strive to develop an industry in Canada that has a minimal degree of external regulatory inputs. The level of these inputs should be commensurate with the effect of influences and actions of regulatory entities that control and influence the market behavior of our competitors. In other words, the objective should be to minimize their effect and influence, and at worst provide, to the best of their ability, a level playing field where a fair, competitive game can be played. If our governments are prepared to play that role, then a large portion of current Canadian horticulture can survive and will prosper. Undoubtedly, this role is not being fully played out now and the specifics of these deficiencies are most evident.

For their part, major sectors of Canadian horticulture are going to have to grow up with regard to taking advantage of the economies of scale that come with larger units; as well, we're going to have to adjust our attitudes towards marketing our products. If we want to be truly competitive we're no longer going to be able to downplay the role of our customers in determining what markets want, especially as we move to becoming players in a more globally oriented market. Canadian horticulture like the rest of agriculture has focused its discussions about competitiveness almost exclusively on cost of production competitiveness. This focus needs to be changed and changed quickly to one that uses as its focal point the cost of delivering "value" to the customer. This value can be determined only by the customer and has in its makeup many components, price being just one of them.

How competitive then do we as an industry have to be to survive and prosper? To answer this question requires, like the commitment to compete, an assessment of the synergistic inputs accessible from the various components of the industry. It is fine for the primary producer to commit to do everything possible to be competitive but these efforts will be wasted if they are not complemented by the efforts of the regulatory and supervisory entities. To start with, it is absolutely essential that in any efforts being made to enhance productivity and competitiveness, a cautious, deliberate long-term approach be adopted because short term dramatics tend to inordinately distort the natural evolution of technology, investment and resource allocation. It is fully recognized that such a long-term approach is usually inconsistent with political objectives and as such is very difficult to initiate and follow through on. Furthermore, it is difficult to make such a strategy operational from the perspective of the individual within the industry because many, in fact, probably the vast majority of these individuals lack the ability to see the merit in such an approach or alternatively they are inordinately preoccupied with short term goals and objectives. This position, proposing a longer term strategy than what many might be comfortable with, does not diminish the need or the recognition for satisfying the need for short term survival. It just logically leads one to conclude that the optimum solution is probably one of having a short term survival strategy contained within a long term competitive strategy.

What then might such a horticultural strategy have as some of its integral components? The first issue that must be recognized if we are to develop a competitive horticultural sector is that we aren't fully, or perhaps even partially, competitive now, certainly not in all sectors of our industry. Similarly, we, it can be argued, are in fact competitive in some sectors. These different levels of competitiveness must be identified and developed. Secondly, we must recognize that certain sectors of the industry will never be competitive and a political decision must be made whether these ought to be sustained in an artificially created environment. A decision to do this obviously cannot be market driven. The blending of this type of strategy, to support non-competitive sectors in the short term with market driven strategies, presents incredible challenges, and it can be forcefully argued that in fact the two are incompatible and thus we must choose.

I don't share that position; however, it will be necessary to have priorities and focus more forcefully on one strategy and I submit that the industry should give long-term competitiveness the highest priority and where trade-offs are made that the long-term competitive strategy should prevail. If Canadian horticulture prioritizes its objectives in this fashion then we can in fact start the process of separating the winners from the losers and furthermore, identify some form of social solution for the losers. There will undoubtedly be a significant number of loser scenarios played out over time. However, just as assuredly there will be, I submit, more winning scenarios developed because of the number of irrefutable assets inherent in Canadian horticulture. Highest on this list has to be the supply of willing, highly motivated, skilled and committed managers. I'm convinced there are sufficient numbers of innovators and adaptors in our industry to keep the industry domestically viable provided they are given an equal opportunity to do so. This management resource need only be given the confidence that the future is reasonably predictable from an external influence point of view. It doesn't need guarantees carved in stone and conversely it cannot be expected to build and plan its future on a foundation of quicksand, quicksand that is there by virtue of the fact that there is insufficient commitment on the part of governments to dedicate their efforts to deliver a climate of fair, competitive enterprise at home and abroad.

It is unreasonable to expect this to happen overnight, especially in light of the fact that it has taken decades to build into our markets all the artificial (economically speaking) components, i.e., tariffs, subsidies, price supports, packaging constraints. The best that can be expected in the short term is a commitment to start undoing these on a global basis whether it be bilaterally or multilaterally. Consciously we must see to it that the impact of such action be gradual and deliberate. This has to be so because of the real need to address, in a socially acceptable fashion, the needs of the losers but even more importantly allow the winners an opportunity to adjust in a deliberate, professional long-term manner so as not to create major shocks which result from unwitting overexpansion in capacity or marketing.

Thus, the strategy for Canadian horticulture, given that it can and will be competitive in many of its current endeavours, should be one of identifying its competitive strengths and weaknesses and then building on these strengths by assuring that these commodities are provided every opportunity to play on a level playing field with their competition and recognize that a social solution, not an artificially created market, is the answer to those components of our industry that can never and will never be competitive. Canadian horticulture will survive in a more competitive global environment, not in its current form, but rather as a significantly less fractured industry, specializing in the things we can and in fact already do produce effectively. This does not preclude, in fact, it includes a recognition of the fact that the industry itself must be prepared to take advantage of all the efficiencies that accrue from technology and economies of scale; it must be prepared to be much more responsive to markets in terms of such parameters as "value added", and it must be prepared to shed many of its inward looking attitudes. There is no need for a siege mentality with regard to competition, especially if you have your house in order cost wise. The only real fear we ought to have is about the danger of "knee jerk" policy making as a result of politically motivated considerations. Long term deliberate adjustments to our market environment as a result of such activities as enhanced trade negotiations, can only benefit those components of Canadian horticulture that are or can become competitive if allowed to grow and take advantage of economies of scale like their potential competitors.

We can't ignore the fact that the rest of the world and its market activities can be perceived to be a many headed monster, terribly intimidating and threatening to our domestic industry. Suffice it to say that if that monster had as its modus operandi a market driven production and distribution system it would quickly diminish in size to a rather feeble, weak-kneed rookie, because the productive machine in Canada, and especially in Canadian horticulture, has operated to a greater degree than most, on the basis of "market driven" values and as such will be much more capable of dealing with this than most of our competitors.

Thus, the question that still begs for an answer is "Do we want to be competitive?" If we do, we must continue to petition our governments to provide the political climate both domestically and globally to operate in such a "market driven" environment. Canadian horticulture will survive and prosper if such a strategy is followed because we can be competitive if we want to be.

FARM COSTS AND INCOME SESSION

A perspective on farm input costs

Tom Wise

This paper covers that part of the presentation that examined some of the relationships between input costs in Canadian Agriculture.

EXHIBIT 1 – MACHINERY EXPENDITURES AND OPERATING EXPENSES

This first exhibit is to show the overwhelming importance of machinery expenditures including investment despite their decline over the last 10 years from about 50% of operating expenditures to only some 30% as farmers slowed their purchases in the current hard times. Of course, investment is not usually considered part of operating expenditures. But as any farmer can tell you it does have to be paid out of revenues.

Payments of Interest are the next major item, and these rose precipitately to over 20% as interest rates rose but now they have fallen to some 14%. Fertilizer and fuel have both risen from about 8% to about 10%. Pesticides remain the lowest item shown on this slide at only some 8% but up from 3% in 1976.

EXHIBIT 2 – OPERATING EXPENSES

However, these are estimates for all of agriculture. No farm is average. On the second exhibit we compare the share of operating expenses of some key inputs for a typical Saskatchewan grain farm with those of an Ontario dairy operation. Both types of farmer are rightly concerned about trends in interest costs, but crop farmers are far more concerned about fuel and machinery repairs than are livestock farmers. Crop farmers are almost as concerned about pesticide costs as fertilizer costs, and indeed, some spend more on pesticides than on fertilizers. Most livestock farmers are little concerned about pesticide costs, but they do spread fertilizer on heir pastures and grasslands, and they are very concerned about the costs of the feed grown by the crop farmers. However not two farmers are alike. Each farmer will, of course, have his own pattern of outputs, of input costs, and of concerns.

EXHIBIT 3 – WHEAT PRODUCTION COSTS PER ACRE – 1984

Many farmers sometimes suggest that if only they could reduce their payments for inputs, they would be better off. This really depends in how the input used affects outputs produced. The third exhibit shows that the costs per acre in the United Kingdom for every kind of input were far higher than in the United States and Alberta. We used the best evidence that we could gather on costs in the three areas - particularly a study by Professor Stanton of Cornell University for the American and British comparisons, and a survey of Alberta farmers by Alberta Agriculture.

EXHIBIT 4 – WHEAT PRODUCTION COSTS PER TONNE – 1984

The British wheat farmers spend far more per acre, but they also get far more production per acre - some three times as much as in North America. As a result, their costs per tonne produced appear very comparable with both Alberta costs and American costs. The British and some other Europeans by developing and adapting very intensive techniques have much larger costs per acre - but not per tonne. However, in the dry land conditions of much of western Canada, moisture conditions clearly limit the degree to which we can copy the British example. The same is not true of eastern Canada.

EXHIBIT 5 – PAST MAJOR IMPACT ON COSTS HAD BEEN THROUGH IMPROVED EFFICIENCY

In Canada too, there has been a trend over the last twenty years to use much more fertilizer and other purchased inputs, and also to achieve a much greater output. However, there has also been far less labour used on farms. Exhibit 5 shows that total inputs rose 5.3%. Output rose 63.5%, productivity rose 55.1%.

The relatively high British and Canadian expenditures on pesticides were made because of two different problems. The British spent a lot on fungicides because of moisture conditions. Albertans have to spend a lot of money combatting wild oats. Americans generally are less bothered by pests. Costs per unit of pesticide are generally not higher in Canada than in the U.S.

EXHIBIT 6 – FARM INPUT PRICE INDEX

Exhibit 6 shows what has happened to the relative prices of inputs and the Consumer Price Index over the last 10 years.

As you can see, all prices moved together until 1980. Since then, the prices of machinery, pesticides and the C.P.I. continued to move together. Fuel prices rose far more than other prices until this year and have now fallen back into line. Fertilizer prices declined 6%, in money terms, and have therefore fallen in relation to all other prices.

Speaking broadly, the price and supply of agricultural inputs are affected by the interplay of three different influences. The first is the general trend of the economy – and most inputs tend to follow general price trends. The second are major changes in world market conditions - and the trend in energy prices reflects these changes, as do interest rates and the cost of debt. The third is that for some inputs, agriculture is the main market. The depressed conditions of agriculture have depressed the markets and prices for both land and fertilizers.

If you wish to examine details of particular inputs and the outlook for 1987 I would refer you to "Market Commentary Farm Inputs and Finance" 1986.

CHART 1. MACHINERY EXPENDITURES AND OPERATING EXPENSES 1976-1985

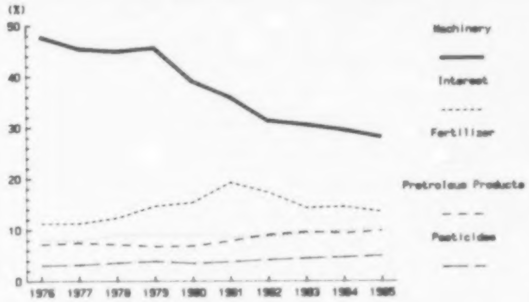


CHART 2. OPERATING EXPENSES

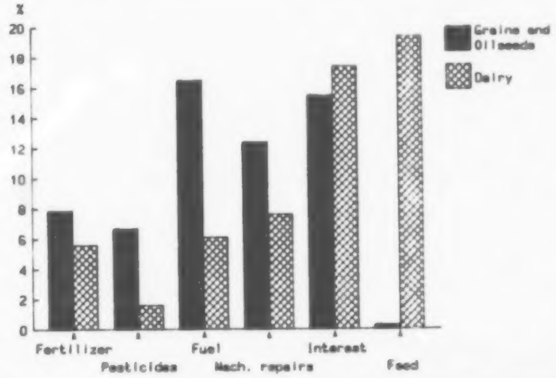


CHART 3. WHEAT PRODUCTION COSTS PER ACRE - 1984

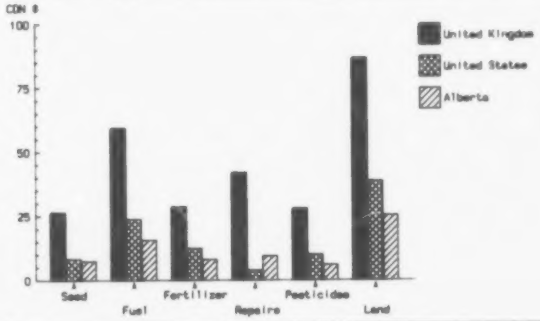


CHART 4. WHEAT PRODUCTION COSTS PER TONNE - 1984

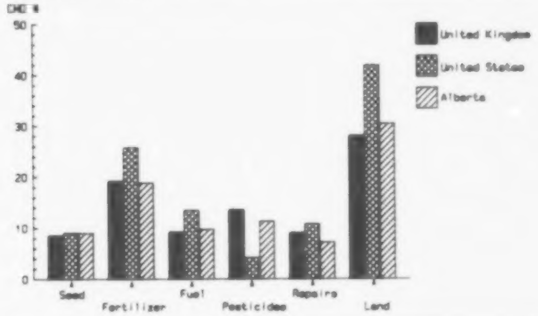
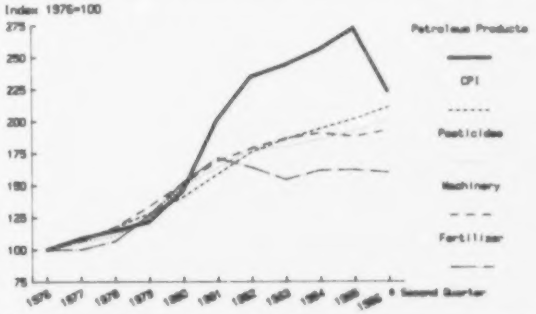


CHART 5. PAST MAJOR IMPACT ON COSTS HAS BEEN THROUGH IMPROVED EFFICIENCY

Comparison of 1960-64 to 1980-84 for all of Canada

Total input use rose	5.3%
Total output rose	63.5%
Productivity increased	55.1%
Farm input price index rose	290.6%
Consumer price index rose	247.5%

CHART 6. FARM INPUT PRICE INDEX



PROVINCIAL FARM INCOME SITUATION AND OUTLOOK

Wayne Jones and Denis Rhéaume

INTRODUCTION[1]

Thank you, Mr. Chairman. Good morning, ladies and gentlemen. Yesterday we heard of record high net farm income in 1986, forecast to be followed by a sharp decline in 1987; a weak grain sector and a strong livestock sector. Again, that's the message at the national level. My task this morning is to examine the farm income prospects at the provincial level and as usual there are substantial differences among the provinces. Most of these differences over the next two years will be attributable to the relative dominance of the grain sector within the provincial farm economies.

Before I start, I would like to acknowledge the assistance of Statistics Canada, particularly the Farm Income and Prices Section, and the Provincial Ministries of Agriculture which have helped us to put this outlook together.

What I would like to try and cover in the next 20 minutes is to look first at the projected changes for 1986, and the forecast changes for 1987, in farm cash receipts by province and then look at the changes in expenses and finally in realized net income. If I have time at the end of my presentation I will make some observations on what all this means to some typical Canadian farms.

CASH RECEIPTS

Turning first to farm cash receipts, which include both market receipts and payouts under government programs, Table 1 indicates relatively large changes in cash receipts from those of last year, particularly when one considers that a 5% change in cash receipts can change net income by 25% to 30%. The strongest gains in cash receipts for 1986 are projected for Ontario and Newfoundland with somewhat smaller gains expected for Quebec, Nova Scotia, Manitoba and Prince Edward Island. For British Columbia we are projecting no substantial change in 1986 cash receipts. For the provinces of New Brunswick, Saskatchewan and Alberta, however, we are expecting declines in cash receipts. If our projections are correct, 1986 will mark the second year in a row of declining farm cash receipts for all three of these provinces.

The outlook for 1987 is somewhat less favourable although we are expecting substantial increases in farm cash receipts for Prince Edward Island, Nova Scotia and New Brunswick and some marginal gains in Newfoundland, Quebec and British Columbia. For Ontario and the Prairies, which is home for about three-quarters of all Canadian farmers, cash receipts are forecast to decline in 1987, with sharp declines expected in the Prairies. The forecast declines in 1987 cash receipts, of 7% in Saskatchewan and 9% in Alberta, for example, will drop cash receipts in those provinces to the lowest levels since 1980.

Looking at some of the highlights behind the 1986 cash receipt projections, first and foremost is the 20% drop in average grain and oilseed prices for the 1986-1987 crop year. Offsetting this to some extent are higher grain marketings in the 1986 calendar year during the January to July period, prior to the lower prices coming into effect. Available data also suggest that there will be a substantial increase in the use of the cash advance program by western farmers. Cash advances provided under this program are projected to exceed last year's borrowings by an amount in the $250 million range. Also as we heard yesterday, substantially higher red meat prices were a major factor affecting cash receipts in 1986, especially hog prices, which, of course, are of particular benefit to Ontario and Quebec. Ontario also benefitted in 1986 from substantially higher tobacco marketings. This is primarily due to an anomaly in the marketing system whereby most of the 1985 crop was in fact marketed in 1986. Ontario receipts were negatively affected by lower fruit production due in part to poor weather conditions. Finally, for 1986 direct payments to producers from government programs are expected to reach record levels. Under the Western Grain Stabilization Act, for example, payments will increase $337 million over 1985 levels to $859 million for 1986. There are also higher payments under many of the provincial programs.

Let us now look at highlights that affect the 1987 cash receipt forecast. In 1987 we will see the full impact of the lower grain prices as all marketings will be affected next year. We do, however, expect some increase in wheat marketings due to the higher volume of stocks and the higher quality of those stocks. The strong red meat prices are forecast to continue with increased hog marketings. At the same time, however, lower poultry and egg prices are expected, due to the formula pricing for poultry and a fairly weak demand for eggs. On a more positive note, we are expecting higher potato prices next year, which will benefit 1987 cash receipts in Prince Edward Island and New Brunswick in particular. Strong prices and sales in the fruit, vegetable and nursery sectors are also forecast for 1987.

FARM EXPENSES

I would like now to turn to farm expenses. Total farm expenses include operating expenses and depreciation charges. Table 2 indicates that the first decline in total farm expenses in 29 years, projected at the national level for 1986, is expected to be shared by all provinces except Newfoundland. In Newfoundland some increase in expenses is likely due to higher feed expenses; associated with increasing cattle production in that province.

Looking at 1987, we are expecting little change in farm expenses from the projected 1986 levels. For most provinces the increase in farm expenses for 1987 should be less than 1%. A slightly higher increase is forecast in Alberta where fuel prices are expected to increase because of an anticipated reduction in the provincial fuel rebate. Fuel prices in that province, however, are still likely to remain the lowest in the country.

My colleague Dr. Wise has already discussed the major influences affecting farm expenses in 1986 and forecast to affect farm expenses in 1987. By way of a brief summary, many of the influences are similar for both years. Take farm debt for example. For both the current year and 1987, total farm debt is expected to decline; these are the first decreases in farm debt recorded since we began estimating farm debt on an annual basis back in 1960.

However, the substantial fuel price declines in 1986 will not be repeated in 1987. Reduced land rents are another factor affecting expenses in 1986 and 1987, particularly in Saskatchewan where the lower grain prices are having a substantial impact on what farmers are willing to pay for rented land. We are expecting lower fertilizer prices, and utilization and feed prices again are expected to fall in 1987. Repair costs are forecast to go up moderately as farmers continue to maintain their older machinery and equipment rather than invest in new equipment at this time. Livestock farmers in the provinces of Prince Edward Island and Ontario and the Prairies are faced with higher levies in 1986 and 1987 as the new red meat Tripartite Stabilization Programs come into effect. Also we expect farm expenses to be lowered in both years due to increased funding under federal and provincial input rebate programs.

REALIZED NET INCOME

In looking at the bottom line, it is important to recognize that realized net income is a residual number. As such, changes in receipts and expenses are magnified five and sixfold when we look at realized net income. Table 3 indicates that realized net income is projected to increase in all provinces in 1986 except Saskatchewan with large increases expected in Ontario (41%), Alberta (30%), and Manitoba (25%). The decline in Saskatchewan is projected at about 9% for 1986. Again you should keep in mind that for most provinces the stronger livestock sector is offsetting a weaker grain sector. Also, because these estimates include direct producer program payments under such programs as the Western Grain Stabilization Act and input rebate programs these payments partially offset lower market returns.

Looking at 1987, we see the full impact of lower grain prices. This sharply reduces realized net income in Manitoba where realized net income is forecast to drop by about 52%, in Saskatchewan by 27%, and in Alberta by 64%. A more moderate decline in 1987 realized net income of about 8% is forecast for Ontario. Higher incomes are forecast in Quebec (about 5%) and also in all the Atlantic provinces with increases of about 32% in New Brunswick, 23% in Nova Scotia, 45% in Prince Edward Island, and 11% in Newfoundland.

Now while it is common practice to discuss changes in realized net income on a year-over-year basis, sometimes a longer term comparison can provide a better picture of the farm income situation and outlook. Table 4 shows the percent change in realized net income for the years 1986 and 1987 by province compared with average incomes for the 1980-85 period. In general, incomes for 1986 and 1987 are forecast to remain well above the recent historical levels except in the Prairies. Based on our forecast for the three prairie provinces combined, 1987 realized net income would be only about one-half of what it was for the average 1980-85 period. A depressed farm income situation is particularly evident in Saskatchewan where low income in 1985 caused by drought has been exacerbated by the low grain prices experienced in 1986 and forecast for 1987.

Within the time remaining, I would like to have a look at what all this means for some typical Canadian farms using some of the results from micro level forecasting models. I have chosen today for comparison three different farms: a Saskatchewan grain and oilseed farm, an Alberta cow-calf operation and an Ontario hog and grain enterprise. Basically, the model allows us to compare estimated and forecast receipts, expenses and net income for 1985, 1986 and 1987 to those of a base period; in this case 1981-84. I should mention that in each case we maintain a constant level of production so that the changes in receipts and expenses indicated in Tables 5 to 7 simply reflect actual or forecast price changes. Also, we've eliminated from the model all program payments to producers so that the estimates indicate market returns only.

Looking at the bad news first, Table 5 shows a Saskatchewan grain farm with about 1200 seeded acres. The market receipts for this farm, if we compare 1987 with the 1981-84 base period, would decline almost 30% given current price forecasts. We would expect that operating expenses and depreciation would remain relatively flat, declining somewhat over this period so that realized net income by 1987 would be only about 20% of the 1981-84 average level. This picture becomes even bleaker if you consider farm debt commitments. For the sake of simplicity in these models we assume there is no farm debt. But in a farm of this size you could expect assets to be valued somewhere in the $800 000 range and certainly interest and principal payments of $30 000-$40 000 a year would not be unusual.

However, I mentioned earlier that these numbers do not include program payments. A farmer such as this would be eligible for substantial financial assistance under a number of programs; in particular, the Western Grain Stabilization Act. If this farmer was a participant in the WGSA program and paid the maximum levy as he likely would have done on a farm this size, he would be entitled in 1986 to a WGSA payment of about $15 000. I should also mention that we include depreciation in the estimation of expenses in order to obtain realized net income. This farm's actual cash income therefore would be somewhat higher because depreciation is not a cash expense.

The story is somewhat reversed for the Alberta cow-calf producer (Table 6). This farm is assumed to sell about 180 head a year. In this case, market receipts by 1987 would be about 35% higher than they were in the base period 1981-84. Expenses are forecast to rise; the result of expected increases in the cost of replacement livestock. Realized net income for this type of operation was quite low during the 1981-84 period. We would expect net income to increase about sixfold by 1987 based on current commodity forecasts. Incomes could increase by even more for this farm if production was to increase, as we expect will happen for the industry as a whole in response to forecast better income margins.

Finally, looking quickly at the Ontario hog-grain enterprise the picture here is even brighter (Table 7). The market receipts in this case would increase by 12% in 1987 from the 1981-84 average level given the current hog price forecast. This means that market receipts would increase from about $180 000 in the base period to about $200 000 by 1987. As with the grain farmer, we expect that 1986 and 1987 expenses for this enterprise would not change significantly from recent levels, resulting in about a 60% increase in realized net income by 1987. Realized net income would increase from $42 000 to $66 000 a year.

The point to be taken from this brief look at the farm level implications of the current farm income situation and outlook is that the income prospects vary considerably by type of farm. I should probably add the caution that the farm level data I have shown here this morning are meant to illustrate the magnitude and direction of change in market receipts, expenses and realized net income. The absolute values shown in Tables 5 through 7 are not intended to represent industry averages, which would have to take account of the large differences among farms in such factors as depreciation charges, operating costs and production practices.

In closing, the aggregate receipt and expense outlook for 1986 and 1987 would suggest a fairly bright picture for provincial farm incomes except for the fact of the dominance in the grain sector in the Canadian farm economy. Unfortunately, the outlook for the grain sector continues to be most unfavourable in the short term, thereby depressing the overall farm income situation and outlook.

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[1] The 1987 farm income forecast was released prior to announcement of the $1 billion Special Canadian Grains Program. This program will add $1 billion to 1987 farm cash receipts. The impact on 1987 farm expenses and, therefore, realized net income depends on what farmers do with this cash assistance. Purchases of additional inputs such as fertilizer and chemicals would increase expenses while repayment of debt would reduce interest expenses. Investment in machinery or buildings would increase depreciation charges. On balance, a marginal increase in total farm expenses can be expected because of the $1 billion program. Realized net income for 1987 is now likely to exceed the projected 1987 level of $4.64 billion rather than decline to $3.82 billion as forecast in this paper.

TABLE 1 FARM CASH RECEIPTS, 1985-87

	1985	1986	1987[a]
		- millions of dollars -	
Newfoundland	43.1	45.5	46.8
		(+5.6)[b]	(+2.9)
Prince Edward Island	176.4	180.9	200.4
		(+2.6)	(+10.8)
Nova Scotia	256.6	265.4	283.6
		(+3.4)	(+6.9)
New Brunswick	222.7	219.6	236.4
		(−1.4)	(+7.7)
Quebec	3 092.7	3 205.0	3 239.9
		(+3.6)	(+1.1)
Ontario	5 161.6	5 478.2	5 376.8
		(+6.1)	(−1.9)
Manitoba	1 997.9	2 058.6	1 807.8
		(+3.0)	(−12.2)
Saskatchewan	4 100.7	4 036.2	3 775.8
		(−1.6)	(−6.5)
Alberta	3 850.8	3 722.6	3 400.0
		(−3.3)	(−8.7)
British Columbia	1 010.5	1 002.8	1 031.4
		(−0.8)	(+2.8)
Canada	19 913.2	20 214.8	19 398.9
		(+1.5)	(−4.0)

TABLE 2 FARM OPERATING EXPENSES AND DEPRECIATION CHARGES, 1985-1987

	1985	1986	1987[a]
		- millions of dollars -	
Newfoundland	33.4	35.0	35.1
		(+4.8)[b]	(+0.3)
Prince Edward Island	144.4	142.7	143.9
		(−1.2)	(+0.8)
Nova Scotia	194.0	192.9	193.0
		(−0.6)	(+0.1)
New Brunswick	175.0	171.1	171.7
		(−2.2)	(+0.4)
Quebec	2 237.5	2 220.7	2 211.6
		(−0.8)	(−0.4)
Ontario	4 245.3	4 157.8	4 172.4
		(−2.1)	(+0.4)
Manitoba	1 646.6	1 616.5	1 604.7
		(−1.8)	(−0.7)
Saskatchewan	3 442.3	3 442.3	3 354.4
		(0.0)	(−2.6)
Alberta	3 341.7	3 050.7	3 179.6
		(−8.7)	(+4.2)
British Columbia	814.1	795.2	787.2
		(−2.3)	(−1.0)
Canada	16 274.5	15 824.7	15 853.5
		(−2.8)	(+0.2)

[a] Excludes $1 billion Special Canadian Grains Program

[b] Bracketted items refer to percentage change relative to the previous year

TABLE 3. REALIZED NET FARM INCOME, 1985-87

	1985	1986	1987[a]
		- millions of dollars -	
Newfoundland	10.4	11.1	12.3
		(+7.1)[b]	(+10.5)
Prince Edward Island	34.6	40.8	59.2
		(+17.6)	(+45.1)
Nova Scotia	68.7	79.0	97.3
		(+15.0)	(+23.3)
New Brunswick	51.5	52.7	69.2
		(+2.2)	(+31.5)
Quebec	915.0	1049.2	1096.3
		(+14.7)	(+4.5)
Ontario	981.8	1388.0	1275.3
		(+41.4)	(−8.1)
Manitoba	368.1	460.0	221.1
		(+24.9)	(−51.9)
Saskatchewan	698.9	635.9	465.3
		(−9.0)	(−26.8)
Alberta	544.9	706.7	256.4
		(+29.7)	(−63.8)
British Columbia	216.2	228.3	264.5
		(+5.5)	(+16.0)
Canada	3890.1	4651.3	3817.0
		(+19.6	(−17.9)

[a] Excludes $1 billion Special Canadian Grains Program

[b] Bracketted items refer to percentage change relative to the previous year

TABLE 4 REALIZED NET INCOME, 1980-85 AVERAGE, 1986-87

	1980-85 average	1986	1987[a]
	$ million	% change	% change
Newfoundland	7.8	+42.3	+57.7
Prince Edward Island	43.1	+5.3	+37.4
Nova Scotia	54.1	+46.0	+79.9
New Brunswick	47.5	+10.9	+45.7
Quebec	690.5	+51.9	+58.8
Ontario	855.0	+62.3	+49.2
Manitoba	272.6	+68.7	−18.9
Saskatchewan	927.9	−31.5	−49.9
Alberta	619.2	+14.1	−58.6
British Columbia	160.6	+42.0	+64.7
Canada	3688.4	+26.1	+3.5

[a] Excludes $1 billion Special Canadian Grains Program

TABLE 5 SASKATCHEWAN GRAIN AND OILSEED FARM

	1981-1984	1985	1986	1987
		$ '000		
Market Receipts	128	104	99	93
Expenses and Depreciation	91	92	89	86
Realized Net Income[a]	37	12	10	7

Cropland – 1650 ac.
Summerfallow – 405 ac.
Wheat – 670 ac.
Barley – 300 ac.
Rape – 125 ac.
Flax – 150 ac.

TABLE 6 ALBERTA COW-CALF FARM

	1981-1984	1985	1986	1987
		$ '000		
Market Receipts	76	85	90	102
Expenses and Depreciation	72	75	75	76
Realized Net Income[a]	4	10	15	26

No. of cows – 150 ac.
Crop Land Base – 550 ac.
Pasture Land – 1700 ac.

TABLE 7 ONTARIO HOG-GRAIN FARM FARROW TO FINISH

	1981-1984	1985	1986	1987
		$ '000		
Market Receipts	180	175	201	201
Expenses and Depreciation	138	139	137	135
Realized Net Income[a]	42	36	64	66

[a] Excludes government program payments and income-in-kind

Land Area – 220 ac.
Pigs Produced and Sold – 1300 ac.

Economic implications of biotechnology and other emerging technologies in crop production

W.D. Beversdorf

INTRODUCTION

Biotechnology may be generally defined as the application of biological organisms, systems, or processes to provide goods or services. Biotechnologies in reality are a group of evolving techniques, the evolution of which began several hundreds and possibly thousands of years ago. Those technologies which we call biotechniques today may within 20 years be considered classical or traditional technologies, and it is difficult to say what the biotechniques of the year 2020 may consist of.

Current applications of biotechnology and agriculture are quite diverse involving both improved livestock and crop production, technologies involved in food and feed processing and possibly in the area of plant cell culture for commercial production of secondary metabolites and pigments. In the area of crop productivity, biotechnologies may have application through the genetic manipulation of plants, through exploitation of micro-organisms associated with plants, through propagation technologies and possibly through the engineering of microbes in the development of natural product chemicals which protect or assist plant development. Goals for the application of biotechnologies in crop improvement may best be considered from the farmers' viewpoint, since farmers are the ultimate decision makers in terms of the crops they grow and the crop management products they utilize to sustain the economic liability of their production units (their farms). Farmers are clearly interested in increased yield potential, better disease resistance, better environmental adaptation including tolerance to heat and drought, stress, salinity problems, etc. Farmers are interested in improved standardability and harvestability of crops, uniform emergence and uniform maturity. Farmers are very interested in the prices they receive for their crops and are therefore interested and concerned about grain and forage quality. Finally, farmers are concerned about management characteristics including herbicide tolerance, efficient nutrient utilization, and tolerance to a variety of crop and soil management practices.

Let us focus now on ways of manipulating plant genetics towards improved crop production. The traditional approach to manipulating plant genetics has been the process of plant breeding and selection. Biotechnologies which may impact plant genetic improvements include; *in vitro* mutagenesis and selection, somoclonal variation and selection, haploidy, protoplast fusion and recombinant DNA technologies. These biotechniques may be of value in improving crop productivity by speeding up the process of developing improved cultivars or by extending the range of genetic variability available to a particular crop for manipulation and selection under traditional breeding and selection approaches.

Parasexual hybridization (protoplast fusion), engineered gene transformation, mutagenesis, somoclonal variation, and gametoclonal variation are all approaches to increasing the amount of genetic variation available within a species. All therefore are additional approaches to creating variability which has traditionally been developed through hybridization between individual plants within a species. Protoplast fusion and gene transformation are techniques of value in breaking down the incompatibility barrier between the different sexually reproducing species. Haploidy including anther culture and microspore culture are methods of speeding up the rate of progress in crop genetic improvement. The procedure is simply a means of converting gametes or microspores of plants into homozygous true breeding lines in a much shorter time frame (six to twelve months) than in traditionally required through inbreeding or full submeaning (four to seven generations). Several other modern technologies including monoclonal antibodies restriction, fragment length polymorphism, nuclear magnetic residence analysis, chromatography, and electrophoresis are also of potential value in analyzing, assessing or selecting improved genotypes within genetically variable populations.

Although biotechnologies have a broad application to crop productivity, realizing the benefits of these technologies is far less certain. Individual biotechniques are not broadly applicable among economic species. Further, the cost of applying many biotechniques is extremely high although their impact on crop productivity is also, in many cases, very large.

The Canadian Agriculture economy is currently at a low ebb, particularly for primary crop producers. Farmers need greater returns if Canadian farms are to remain liable. This of course can be done by reducing the number of farms to balance production with domestic and reasonable export expectations, by increasing federal and provincial subsidies or by increasing our competitiveness through increased productivity. Biotechnologies may offer an opportunity for increasing Canadian agricultural competitiveness over the long term, but to realize the impact of increased competitiveness through increased productivity a significant research and development expenditure is required. Canada has never been a truly technology driven society. It is therefore questionable if Canada has the will to commit additional research and development expenditures necessary to maintain or improve our agricultural competitiveness solely from the public sector.

Several policy issues could impact the research and development expenditures on Canadian agricultural productivity and therefore impact the medium and long term viability of our agricultural economy. A regulatory infrastructure that encourages additional private sector R&D input into Canadian crop productivity may include the development of reasonable, publicly assessable germplasm resources available to both public and private agricultural research organizations; plant breeders' rights that recognize the investment devoted to improvement of Canadian crop species; reasonable procedures for registering plant varieties in Canada; recognition of plant patents as a means of stimulating or encouraging R&D investment in crop productivity, reasonable procedures for testing microorganisms associated with crop protection or crop productivity; encouragement of public sector support of domestic industries as opposed to foreign agricultural industries. All of these issues could have beneficial effects on the medium and long term viability of Canadian agriculture.

In the absence of a reasonable infrastructure for private sector R&D support of agricultural research and development, the Canadian farmer will be restricted to the innovations provided by marginally financed public sector research in Canada while his competitors, the producers in Europe, U.S., and many other nations will receive the benefits of both public research and significant privately supported research for the productivity of their competing products. In the absence of a reasonable infrastructure, we can probably assume that the productivity and competitiveness of the Canadian grain producer will continue to lag behind the advances achieved by our competitors in foreign markets.

Many of the issues that impact the medium and long term viability of the Canadian agricultural economy therefore are not technical questions but rather questions of policy and regulation. With all of the bright minds that each of us has encountered at this outlook conference, surely there can be better solutions to our declining agricultural competitiveness than through long term subsidies to maintain a non-competitive industry. Truly, the choice is yours.

I would like to thank the organizers of this outlook conference for the opportunity to provide this perspective of the economic implications of biotechnology and other emerging technologies in crop production.

Economic implications of biotechnology and other emerging technologies in animal production

P. Trelawny

INTRODUCTION

Agriculture in Canada, as in most other parts of the world, has experienced two major technological eras during this century. First, the "mechanical" era, starting in the 1920s, encompassed the transition from the use of draft animals and human labour to mechanical power. Second, the "petro-chemical" era, starting in the 1950s, saw an increase in the ability of producers to control pests and diseases, and through the application of inorganic fertilizer, enhance yields. Agricultural production has been further improved by the intensification of conventional animal and plant breeding methods during these eras. Generally, previous technological advances have led to improved efficiency, superior product quality, lower consumer prices and the release of labour to more profitable uses in other sectors of our economy. Canadian agriculture is now experiencing two new eras simultaneously, the result of advances in information technology and biotechnology. These emerging technologies may accelerate the pace of technological innovation as never experienced before.

This presentation investigates the economic implications in animal production of the emerging technologies: primarily, biotechnology and secondarily, information technology. The myriad prospects stemming from the application of biotechnology in Canadian agriculture are even more far-reaching than those of information technology. The microchip is essentially a device for handling information while biotechnology is able to produce agricultural inputs and even new food products. Hence, this presentation will largely focus on biotechnology with a brief review of information technology.

The presentation is divided into four parts. First, the major emerging technologies will be briefly identified to provide the information required to understand their wider ramifications. Second, the potential effect of the emerging technologies on future productivity will be reviewed. Third, the commercial potential of bovine somatotropin (bSTH) and porcine somatotropin (pSTH), also referred to as growth hormones, will be examined. bSTH and pSTH promise to be two of the most important new biosynthesized products applied in agriculture in the future. Fourth, the potential long-term ramifications of these two specific biotechnologies and other emerging technologies, will be assessed.

SURVEY OF THE EMERGING TECHNOLOGIES

The major new technologies that will most likely be utilized in the production of livestock and poultry in the future are biotechnology and information technology. Although technical advances are expected in other areas, such as farm machinery, the application of these advances will be of limited importance.

Biotechnology

Biotechnology, broadly defined, involves the application of scientific and engineering principles to the processing of materials by biological agents to provide goods and services (OECD, 1982). Throughout history biotechnology has been used in agriculture with tremendous success to improve plant breeding, animal husbandry, baking and brewing. This presentation focuses on the "new" biotechnologies which promise to have the most substantial effect on the livestock and poultry sectors: recombinant deoxyribonucleic acid (rDNA) technology, also known as gene splicing, monoclonal antibody (MABs) production and embryo transfer procedures.[1]

rDNA technology, defined as the joining of DNA from different organisms for a specific purpose, is considered one of the more monumental advances of the biological sciences. In animal production, the major application of rDNA technology involves the utilization of genetically modified bacteria to synthesize pharmaceuticals. Recombinant pharmaceuticals useful in the production of livestock and poultry include somatotropin, prolactin, numerous vaccines, and immunity enhancers, such as interferons and interleukins. Prior to the introduction of recombinant techniques, sufficient quantities of these pharmaceuticals were difficult to obtain. The application of rDNA technology now permits the relatively inexpensive synthesis of large quantities of these substances. For example, until recently interferon could be obtained only from cells of animals and humans at a cost of $50 million per gam and at a level of purity of less than 1%. However, interferon is now recombinantly manufactured at prices a fraction of pre-biosynthesized levels and virtually absent of impurities.

MABs are proteins recombinantly manufactured in a complex process involving the fusion of cells. MABs are used in a number of important ways such as for the purification of proteins made by rDNA techniques, immunization of calves and hogs against scours, detection of diseases, sexing of livestock embryos, and monitoring the level of hormonal drugs.

Embryo transfer is a technique whereby embryos are collected from donor females and transplanted to other females, which serve as surrogate mothers for the remainder of pregnancy. Embryo transfer procedures have been applied to humans and almost every species of domestic animals. The technique is useful for rapidly improving the productivity of livestock, in particular cattle, and allowing genetic material to be readily disseminated abroad. Within the past decade, embryo transfer procedures have become sufficiently sophisticated to permit embryos to be sexed with MABs, split to yield twins, fused with embryos of other animal species, or frozen in liquid nitrogen for storage.

The initial widespread use of biotechnology in agriculture will most likely occur in animal, rather than plant, production. There are three major reasons for this difference. First, many of the advances in human medical research are applicable to livestock. Second, more is understood concerning the genetics and physiology of mammals, as opposed to plants. Third, most of the recombinant substances useful in the production of animal products are produced in contained systems, thus reducing environmental risks and facilitating regulatory approval.

Information technology

There are three types of developments in information technology which are currently being adopted in animal production.

First, communication and information management technologies are enabling farm operators to collect and analyze information, increasing their ability to make decisions. These technologies include microcomputer based hardware systems, both general purpose and specialized software, and regional networks.

Second, monitoring technology is permitting the detection of certain conditions and subsequent notification of the farm operator of these conditions. The greatest potential of this technology will be in the area of reproduction. Sensors have been developed which are able to detect estrus, thereby permitting faster rebreeding.

Third, control technology is allowing decisions to be made without the direct attention of the farm operator. For example, a computer-based feeding system in a livestock operation enables each animal to be fed according to individual nutrient requirements.

In short, the application of information technology is permitting improvements in the speed and accuracy of decision-making and reducing labour needs.

FUTURE PRODUCTIVITY AND EFFICIENCY

The emerging technologies will have the most dramatic effect on the dairy industry, primarily due to advances in the area of rDNA technology (Table 1). From 1971 to 1985 in Canada, annual milk yield per cow increased at an average rate of 2.9% per year, from 3345 to 4762 kg. The emerging technologies are expected to raise milk yield per cow above this historical rate of growth. In poultry, projections of productivity increases are more moderate; egg production per layer is expected to rise by 11% by the end of the century.

Advances in productivity in the beef industry have been gradual in the past. This trend is expected to continue if the beef cow herd remains a claimant of residual resources and a supplementary enterprise on many farms.

The application and adoption of emerging technologies will increase the feed efficiency of most domestic animals. Advances in feed efficiency are expected to be most significant in the production of poultry and pork.

COMMERCIAL POTENTIAL OF BIOTECHNOLOGY: bSTH AND pSTH

The first broad application of biotechnology to enhance productivity in agriculture is expected to occur in the dairy industry, possibly in 1989 or 1990, with the commercial introduction of bSTH. Most likely, this will be followed shortly afterwards by the introduction of pSTH in the pork industry. Similar products are also being developed for poultry, beef cattle and sheep.

Somatotropin is secreted in minute quantities from the pituitary gland located at the base of the brain. In addition to influencing growth, somatotropin is one of the major physiological factors regulating the complex process of milk synthesis.

For over half a century, research scientists have been aware of the capacity of exogenously introduced bSTH to enhance an existing lactation. However, the isolation of bSTH from the pituitary glands of slaughtered cows in commercially practical quantities has been prohibitively expensive. Approximately 200 slaughtered cows are required to produce a sufficient quantity of the pituitary-derived bSTH to increase the milk production of a single cow for one day.

Recent advances in rDNA technology now permit the synthesis of large quantities of recombinantly-derived bSTH at economical prices. The treatment of bSTH is expected to increase milk yield in commercial herds between 10 and 25% (Table 2). Production increases of this magnitude would previously have required the application of natural selection to numerous generations of cows.

The economic benefits from using bSTH are promising. The application of bSTH could increase farm returns by $1.50 to $3.50 or 4 to 8% per hectolitre of milk[2]. The increase in returns would depend on the response of treated cows to bSTH and characteristics of individual farms. In addition, the costs of acquiring and applying the hormone must be deducted from these returns. Currently, the market price of the product is unknown.

pSTH, similar to bSTH, has recently been recombinantly produced. The commercial usefulness of pSTH is due primarily to its capacity to influence growth. When the hormone is exogenously administered to barrows, more nutrients are partitioned for muscle synthesis and less for fat synthesis. Since the production of muscle requires less energy than fat, pSTH increases the growth rate and feed efficiency of treated hogs (Table 3). The treatment of pSTH is expected to increase feed efficiency between 5 and 20% on hog farms.

The economic benefits from using pSTH are equally as promising as those of bSTH. The application of pSTH could enhance farm returns by approximately $4.00 to $15.00 or 4 to 9% per hundred kilograms of pork, depending on the characteristics of individual farms and responsiveness of treated hogs to pSTH. Once again, the costs of acquiring and applying the hormone must also be deducted.

In general, the application of somatotropin will have significant effects on productivity and, consequently, farm returns. However, it must be stressed that the somatotropin is only one of a first generation of new technologies. Subsequent generations of products are expected to have more dramatic effects on the production of livestock in the future. Many new breakthroughs in animal genetics and physiology will occur in the next 15 to 20 years, producing an array of new technologies.

LONG-TERM OUTLOOK

The effect of new technologies will vary greatly in magnitude and timing. Some technical advances will lead to moderate increases in productivity while others will have major impacts. The future effect of biotechnology is uncertain because only a limited number of products is presently commercially available. The major effect of the application of biotechnology in animal production will not be observed for five years or more. In contrast, the broad introduction of information technology has already begun.

Constraints on the application of biotechnology

Several major hurdles must be passed before the commercial application of biotechnology is realized in animal production in Canada. First, acceptance by consumers of products from livestock and poultry treated with the output and processes of biotechnology must be assured. An adverse reaction by consumers could have enduring consequences. Currently, dairy and meat products from cows treated with bSTH in research herds are successfully being marketed in Canada. Second, the regulatory process is perhaps the most important constraint to transferring the results of research on biotechnology to commercial application. Regulations will influence the timing of the introduction of new products. The authority to enact regulations with respect to biotechnology lies largely with the federal government, in particular, Agriculture Canada, Health and Welfare Canada, Environment Canada, and Consumer and Corporate Affairs. Presently, clear guidelines have not been articulated for approving the products and processes of biotechnology. In addition, the methods for and scope of mandatory testing have not been established. The current lack of definite regulations may be a significant factor hindering the future introduction of the products of biotechnology in agriculture.

EFFECTS

Structure

Structure refers to the number and size of farms, extent of vertical integration, etc. Historically, technological advances have had a significant effect on the structure of agriculture. For example, advances in farm machinery and development of veterinary medicines to control diseases have allowed producers of livestock and poultry to expand and vertically integrate. In the future, the introduction of new technologies is expected to accelerate the trend towards fewer and larger farms. The operators most capable of utilizing the new technologies will acquire the assets of less competitive producers, thus increasing the proportion of large farms and decreasing the total number of farms.

Distributional impacts

In competitive markets, such as those for hogs and beef, producers who adopt a major new technology earlier than others will be the initial beneficiaries. These "early adopters" will gain through lower costs of production and, consequently, enhanced returns. The higher returns will encourage the "early adopters" to expand their output. As output expands, input and output prices will be bid upwards and downwards respectively, thus eroding the economic benefits which accrued to the "early adopters". Concomitantly, the profits of the firms producing the new technology will rise. In addition, consumers will benefit from lower product prices. Those producers who fail to adopt may be forced to shift their resources into other pursuits, either within or outside agriculture. This short-term reallocation of resources may be necessary to improve efficiency. In markets with administered prices and restricted supply, such as those for dairy and poultry products, it is not clear which individuals or sectors might benefit from the application of technical innovations.

Input requirements

The emerging technologies will continue the trend towards more efficient production of livestock and poultry products in Canada. In general, the introduction of technological advances will lead to a decline in the utilization of labour; however, skill requirements will rise (Table 4). In addition, the application of new technologies will lead producers to allocate more of their attention to the management of farm operations and less to the execution of farm tasks. The application of the products of biotechnology, such as somatotropin will probably not require additional investment in capital. However, the adoption of information technologies is likely to significantly increase the use of capital, both human and physical.

Products

The emerging technologies will allow more control over the characteristics of livestock and poultry products. For example, treatment of hogs with pSTH will reduce the ratio of fat per unit of lean meat in pork products. This will allow pork to become a closer substitute for chicken. In general, biotechnologies will permit greater control over the quality and homogeneity of livestock and poultry products.

Perhaps the most significant application of biotechnology in the future will be in the creation of entirely new systems of production, yielding novel foods. For example, "chicken" pies are currently marketed in Britain which contain biosynthesized micro-proteins instead of chicken. These micro-proteins have the texture, taste and nutrient value of chicken, but contain no fats.

CONCLUSIONS

The emerging technologies, in particular biotechnology, have the potential to at least maintain and, most likely, increase the speed and magnitude of technological change in the production of animal products in the future. The effects of technical innovation can not be forecasted with any degree of accuracy; however, it is possible to predict the continuation of several general trends. Farm prices, net of inflation, of most livestock and poultry products will most likely continue to fall. The quality of the products is expected to improve. Past structural changes will continue unabated. Larger and fewer farms will be required to produce the livestock and poultry products needed to satisfy demand in the future.

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[1] Henceforth, the term biotechnology alone refers to these "new" biotechnologies.

[2] The effects of bSTH and pSTH on farm returns are estimated using linear programming models of representative dairy and hog farms, respectively.

TABLE 1. EFFECT OF EMERGING TECHNOLOGIES ON PRODUCTIVITY AND EFFICIENCY IN ANIMAL PRODUCTION

Commodity	Item	1985	2000
Beef	Kg feed per kg Meat	14.3	13.6–15.2
	Calves per cow per year	0.9	0.9–1.0
Dairy	Kg feed per kg milk	1.0	0.9–1.1
	Milk per cow per year (kg)	4762	7000–9000
Poultry	Kg feed per kg meat	2.5	1.7–1.9
	Eggs per layer per year	243.0	260–280
Hogs	Kg feed per kg meat	6.4	5.3–5.8
	Pigs per sow per year	14.4	15.7–17.8

Assumption: A modest real growth in research and continuation of all other forces that have shaped past development of new technology.

TABLE 2. SUMMARY OF THE EFFECTS OF THE TREATMENT OF bSTH ON LACTATING DAIRY COWS

Authors	Origin	Dose (mg/day)	Duration (days)	Milk yield increase (%)
Brumby and Hancock (1955)	pituitary	50.0	84	45
Machlin (1973)	pituitary	38.6	70	40
Bines *et al* (1980)	pituitary	30.0	7	15
Peel *et al* (1985)	pituitary	50.0	184	13
Bauman *et al* (1985)	pituitary	27.0	19	17
	recombinant	13.5	189	23
	recombinant	27.0	189	36
	recombinant	40.5	189	41
Chalupa *et al* (1986)	recombinant	12.5	266	24
	recombinant	25.0	266	22
	recombinant	36.3	266	37

TABLE 3. SUMMARY OF THE EFFECTS OF THE TREATMENT OF pSTH ON HOGS

Authors	Dose (Mg/kg body weight/day)	Average daily gain (%)	Feed/Gain ratio[a] (%)
Machlin (1972)	0.033	+11	−7
	0.130	+13	−19
Chung (1985)	0.022	+10	−4
Etherton (1985)	0.030	+11	−20
Rebhun *et al* (1985)	0.010	+9	−5
Boyd *et al* (1985)	0.060	+19	−18
	0.120	+16	−28
	0.200	+11	−30

[a] A decrease in the feed/gain ratio represents an increase in feed efficiency

TABLE 4. POTENTIAL IMPACT OF TECHNOLOGY GROUPS ON CAPITAL AND LABOUR AT THE PRODUCER LEVEL IN ANIMAL PRODUCTION

	Potential additional change induced by technology group by year 2000 in		
Technology group	Capital	Labour	Capital/Labour ratio
Biotechnology	Decrease	Decrease	No significant change
Information Technology	Increase	Decrease	Increase

FOOD SESSION

Productivity and the international competitiveness of the Canadian food and beverage processing sector

D.A. West

Thank you Mr. Chairman

If barriers to international trade were reduced, what would happen to the Canadian food and beverage sector?

I don't have a definitive answer. However, perhaps we can form some judgements by looking at how the sector and its individual industries have performed in the past, and by analyzing some of the factors that lead to differences in competitiveness between countries.

In this review, I am defining the international competitive position of an industry as its ability to produce and sell profitably in foreign markets, or in the domestic market, in open competition with foreign producers.

We should keep in mind that, at the industry level, competitiveness is more a matter of degree than a yes or no proposition. In particular, an industry might be competitive in some product lines and in some geographic areas but not in others.

I will begin with a look at Canada's competitive position using trade performance as an indicator of competitiveness. To determine how we would do under freer trade, however, we must dig a bit deeper.

I will thus examine the effects of input prices and productivity on costs.

This will be followed by a brief examination of some of the factors which influence productivity and costs and a few conclusions regarding our competitive position.

CANADA'S COMPETITIVE POSITION

An analysis of how well an industry has been performing within the existing trading environment can sometimes provide at least an initial indication of how well it might do under freer trade.

For this purpose, we look at three ratios and how they have been changing over time.

- The first is the ratio of Shipments to the Canadian market. The Canadian market is shipments less exports plus imports. A percentage greater than one hundred means a positive trade balance.
- Second is the export orientation ratio, which is the percentage of shipments that are exported, and
- The third ratio is the import penetration ratio, which is the percentage of the Canadian market supplied by imports.

In recent years both the share of total shipments exported and the share of the domestic market supplied by imports have been quite stable, although over the longer term they have both increased (Figure 1).

The export orientation ratio is about 12%, and the import penetration ratio about 10%, providing an overall shipment to Canadian market ratio of 102.5%.

Since at least 1966, the sector has had a positive trade balance in every year except one.

I would conclude that the sector has been reasonably competitive.

Applying the same criteria to the individual industries of the sector, we can at least tentatively classify them as being *more competitive, equally competitive* or *less competitive* compared to the sector as a whole (Table 1).

However, we will exclude the flour, dairy, poultry and brewing industries because of the significant barriers to trade in their products.

Within the *more competitive* group, I might note that fish and distilleries have very high two-way trade indicating product specialization or regional trade flows.

The sugar industry no doubt benefits from the different trade policies of Canada and the U.S., whereas slaughtering and meat processing is perhaps one of the most open to two-way trade.

Within the more or less *equally competitive* group there is very little trade in bakery and soft drinks, reflecting high transportation costs. On the other hand, vegetable oil mills ranks third within the total sector in terms of both export and import ratios.

It is of some interest that the *less competitive* group includes some industries dependent on imports for their raw product. With respect to fruit and vegetable processors, I would note that the frozen food sub-industry appears to be relatively competitive.

In summary, this brief review of trade performance indicates that the sector as a whole has at least been holding its own.

Also, we have tentatively identified those industries which have been performing well and some which appear to be less competitive.

These results are influenced to some degree, however, by the trade policies of both Canada and other countries and exchange rates.

We will now begin our examination of the factors affecting the cost competitiveness of the sector.

INPUT USE AND PRICES

As our first step, let us look at what has been happening to the utilization and prices of inputs as they relate to output and output prices.

This slide is a reminder of the relative importance of the various categories of inputs. Note that raw materials and supplies add up to about 75% of the total.[1]

These expenditure shares tend to be fairly stable over time. In part, this stability reflects efforts to minimize costs by substituting less expensive for more expensive inputs.

This slide illustrates the point. The top half shows the percentage change in output and in each of the 4 major input categories, over the 1962-82 period.[2]

In particular, note the small increase in energy use and the lack of any increase in aggregate labour input.

If we now look at the lower half of the slide, we see at least one possible reason for changes in quantities of inputs.

Over this period, the price of both energy and labour increased by around 500%, almost double the increases for materials and supplies and capital[3].

Note that the weighted average increases in the prices of all inputs would be less than the increase in the price of output.

I would now like to briefly examine farm commodity prices and labour compensation rates as they affect the competitiveness of the food and beverage industries.

Farm prices

Appreciable differences between countries in farm prices would most likely occur where the domestic commodity market is protected from imports by high transportation costs or by tariff and non-tariff barriers.

The impact of market regulation on raw product costs is thus of special concern to some industries. A few, very rough comparisons of relative Canada-U.S. prices illustrate this concern.

In the case of both turkey and chicken, the average Canada/U.S. price ratio, in Canadian dollars, is well above one and is quite variable over time (Figure 2). The turkey price ratio may be increasing a little, but, if anything, the chicken ratio has been declining.

In the case of dairy, where prices on both sides of the border are subject to a variety of policies, the price ratio shows a relatively smooth cyclical pattern. (Figure 3). On the other hand, the price ratio for tomatoes, which compares a collectively negotiated contract price with an individual pricing system, shows great year-to-year variability.

As a basis of comparison, this slide (Figure 4) shows prices for fed cattle and hogs, two relatively freely traded commodities. In this case, the price ratios show less year-to-year variation and are closer to one. In general, it would appear that administered prices tend to be higher and, of course, less responsive to short term market conditions.

Labour

With regard to labour, the concern about large increases in wages, salaries and benefits is heightened by the relatively local nature of labour markets. The immobility of workers, union pressures and government policies provide no guarantee that labour compensation rates will in a sense equalize between countries.

Although, it is difficult to compare compensation rates, some indicators are available.

In particular, in 1972 the average hourly wage of production workers in the food and beverage industry in Canada was 84% of the U.S. wage measured in the same currency. By 1981, Canadian wages had increased to 91% of those in the U.S. despite the depreciation of the Canadian dollar.

In both 1972 and 1981, Canadian wage rates were lower than U.S. rates in nearly every industry of the sector. (Changes in average weekly wages suggest that since 1981 the hourly wage ratio may have moved somewhat more to Canada's favour).

It is of some interest that, over this period, the industries in Canada with the largest wage increases were those with protected markets (dairy and poultry) and the smallest increase was in the industry perhaps most open to international competition, slaughtering and meat processing.

This analysis of wage rates, however, does not include benefits. Food processors report that the cost to them of labour benefits is higher than in the U.S.

However, an analysis for 1982 by the Conference Board of Canada found that the cost to employers of unemployment insurance, workmen's compensation and pensions, when measured on an hourly basis and in the same currency, were lower for the food and beverage sector in Canada than in the U.S.

As a result of recent changes in income tax legislation in Canada and the United States, benefit costs in Canada may now be relatively higher but it is believed that the combined cost of wages and benefits has remained below the combined level in the U.S.

In this section, we have observed the changing pattern of input use which, at least in part, reflects changes in relative prices. While some farm prices are higher in Canada than the U.S., the gap has not been getting wider. On the other hand, labour compensation rates have been lower but the advantage has been eroding. We turn now to the other half of the cost picture, productivity.

Productivity 1970s

I will look at both labour productivity and total factor productivity. In doing so, I will be using preliminary results of research conducted at Agriculture Canada by Mehrzad Salem.

Traditionally, productivity studies have measured labour productivity, i.e., the level of output per unit of labour. Such studies indicate that in the 1970s labour productivity for the Canadian food and beverage sector as a whole was only about 70-80% of the level in the U.S.

As indicated by this slide, (Figure 5) labour productivity growth since the 1970s has been about equal in the two countries.

Recall that compensation rates in Canada were less than 10% below those in the U.S. and the Canadian rate was increasing much more rapidly than the U.S. rate. Therefore, if these labour productivity results are even approximately correct, labour cost per unit of output in the Canadian sector has been higher than in the U.S. and the gap has been widening.

Of course, this result would not necessarily apply to all industries within the sector. Both labour productivity and the labour compensation differentials between Canada and the U.S. can differ appreciably from the sector average.

While we do not have labour productivity comparisons with the U.S. by industry we do have industry estimates for Canada (Table 2).

Over the 1962-82 period, 8 industries had a labour productivity growth rate for the 1962-82 period greater than the sector average of 3.3% per year. I decided that the vegetable oil industry was close enough to the 3.3% average to be included in this group.

At the same time, 9 industries had a labour productivity growth rate less than average.

International competitiveness, however, depends on total unit costs, not just the cost of labour. In particular, an increase in output per unit of labour could come at such a high price, in terms of, say, capital expenditures, as to not reduce unit total costs. Indeed, our research indicates that a large percentage of labour productivity growth was merely the result of the increased use of other inputs.

For the purposes of analyzing competitiveness, we thus need a concept of total factor productivity, i.e., the ratio of total output to total input. The problem is that we must explain how, over time, we might get more output with the same or proportionately less total input.

Leaving aside the measurement problem, we can say that an increase in total factor productivity could result from greater capacity utilization, favourable economies of scale, and technical progress. This last term measures the effect of factors such as technological change, organizational improvement, government regulation and product quality.

As this slide indicates (Figure 6), during the 1960s total factor productivity in the Canadian food and beverage sector grew at a faster rate than in the U.S. sector. From the mid-1970s, however, total productivity grew little in Canada whereas in the U.S. it increased appreciably. For the overall 1962-82 period, the Canadian growth rate was averaged 0.36% per year, slightly more than the U.S. rate of 0.3% per year.

Of most concern is the lack of significant productivity growth in Canada over the 1972-82 period compared to the large gains in the U.S. This indicates a deterioration in Canada's competitive position, other things being equal.

We do not have measures of the absolute Canada-U.S. differential in total factor productivity for the food and beverage sector, nor do we have estimates of total factor productivity growth by industry for the U.S. However, we have made estimates by industry in Canada (Table 3).

These 4 industries had above average growth rates for the 1962-82 period as a whole but they all suffered a declining trend.

As indicated by this slide, 8 industries had roughly average rates of growth.

The remaining 6 industries had measures of total factor productivity growth well below those of the sector average; indeed, 5 had negative rates.

As a concluding comment to this section, I would observe that the measurement of productivity growth is far from an exact science and especially the comparison of growth rates between countries. The evidence available, however, indicates that for a number of industries in Canada productivity performance is a concern. It is important, therefore, to examine the factors which affect productivity differences between countries and the productivity growth rate.

INFLUENCES ON PRODUCTIVITY AND COMPETITIVENESS

I would like to discuss very briefly two of the underlying influences on productivity and competitiveness – economies of size and research and development – and to simply identify a few others.

Economies of size

There are several reasons to expect that larger firms might achieve greater output per unit of input than smaller ones. Such economies of size may be based on certain technical relationships, greater specialization and longer production runs.

There are limits to such gains, however, and at some point, increases in size could result in no advantage or even higher costs. The size of plant required to minimize costs would differ greatly among industries.

Trends in plant sizes support the view that economies of size do exist at that level. In virtually every food industry in both Canada and the United States the numbers of plants have been falling and their average sizes have been increasing. In both countries, the average real value of shipments per plant increased about 50% over the 1972-82 period.

If it is true that larger plants are more efficient, then most Canadian plants operate at a disadvantage. As can be seen in this slide (Table 4), in 1982 the value of shipments per plant in Canada was below that of the U.S. for every industry for which comparable data were available, and in some cases, well below.

Research and development

Research and development is the ultimate basis of technological improvements. Estimates made in the late 1970s and early 1980s place R&D expenditures by Canada's food processing sector at about 0.1% of sales compared to 0.4% in the U.S. In both countries, this ratio is below that for the respective overall economies.

In both Canada and the U.S., research by the food and beverage sector is concentrated in a few companies. In Canada, 15 companies, each with an R&D budget of half a million dollars or more, account for some 80% of private sector food R&D. In the U.S. it is estimated that 36 companies do 90% of the total.

To the degree that R&D by multinational firms is performed by the parent company, Canadian subsidiaries would benefit at little cost. On the other hand, the R&D done may not adequately reflect specialized needs of the Canadian subsidiary.

Perhaps the key point about technological change in food processing, however, is that much of the R&D is done by firms which are suppliers of equipment and ingredients to the industry and Canadian firms have equal access to such suppliers. In this respect, perhaps the rate of spending on new machinery and equipment is more indicative of the rate of technological progress than any other variable.

Other factors

The number of factors which affect productivity and competitiveness is large. It would include capacity utilization rates, demand growth, taxation, inflation and government regulation. In addition, measured productivity growth does not take into account changes in the quality of inputs and outputs. The degree to which these kinds of influences differ between countries, however, would be difficult to assess.

CONCLUSION

I would now like to provide a brief overall summary and suggest a few conclusions. I should add that my conclusions are *not* necessarily those of Agriculture Canada.

Our review of trade performance indicates that the food and beverage sector as a whole has been doing well. While imports are up, so are exports and the sector has a positive trade balance. These results, however, have been influenced by tariff and non-tariff barriers and changes in the exchange rate.

Our examination of selected commodity prices showed a higher average level in Canada but at least the price differentials were not widening. Labour compensation rates appear to be lower than in the U.S. but in this case the gap has narrowed. These comparisons also benefit from the depreciation of the Canadian dollar.

Going one step further, we found that although productivity has been growing in Canada, its rate of growth fell considerably in the late 1970s and early 1980s. This is especially troublesome because productivity in the U.S. continued to increase, possibly at an even faster rate than before.

These broad results, however, do not apply to every industry. The food and beverage sector covers a wide spectrum of industries and some appear to be strongly competitive.

The overall assessment which emerges is that the rather positive performance of the sector with regard to production and trade may be more strongly affected by trade policies, the devaluation of the Canadian dollar and the strong performance of a few industries (notably fish and slaughtering and meat processing) than fundamental productivity improvement.

At the same time, however, industry rationalization is taking place and there is little reason to believe that the sector cannot gain access to the innovations and resources it requires to be competitive.

While more open trade might be a problem for some industries, it would be an opportunity for others to gain the size of market required for efficient production.

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[1] Labour, capital and energy represent about 13%, 11% and 1.2%, respectively.

[2] Output increased 98%, materials and supplies 102%, capital 106%, energy 39% and the quantity of labour did not change.

[3] Output prices increased 242%, while the prices of materials and supplies increased 239%, labour 494%, capital 262% and energy 516%.

TABLE 1 TRADE PERFORMANCE MEASURES, FOOD AND BEVERAGE PROCESSING INDUSTRIES, 1984

	Shipments/canadian market	Export orientation	Import penetration
		- percent -	
More competitive industries			
Fish	167	67	45
Distilleries	140	49	29
Sugar	112	16	6
Slaughtering and Meat	108	13	6
Breakfast Cereal	105	14	10
Equally Competitive Industries			
Feed	104	6	2
Bakeries	101	4	2
Soft Drinks	98	1	3
Vegetable Oil	98	26	28
Less Competitive Industries			
Biscuit	92	8	9
Confectionery	89	9	19
Miscellaneous	89	3	14
Fruit and Vegetable	83	12	28
Wineries	50	1	50

Source: *Manufacturing Trade and Measures, 1966-84*. Department of Regional Industrial Expansion, Ottawa, 1985.

TABLE 2 LABOUR PRODUCTIVITY GROWTH,[1] FOOD AND BEVERAGE INDUSTRIES, 1962-82

Industry	Percent/year
Soft Drinks	5.1
Feed	4.6
Distillieries	4.3
Wineries	4.0
Sugar	3.4
Dairy	3.4
Slaughtering and Meat	3.4
Vegetable Oil	3.2
Fruit and vegetable	2.8
Poultry	2.7
Breweries	2.7
Confectionery	2.5
Biscuit	2.4
Bakeries	1.8
Miscellaneous	1.8
Flour and Breakfast Cereal	1.6
Fish	1.1

[1] Preliminary esimates.

Source: M. Salem: "Productivity and Technical Change in Selected Food and Beverage Industries, 1961-82", Agriculture Canada (Unpublished).

TABLE 3 TOTAL FACTOR PRODUCTIVITY GROWTH, FOOD AND BEVERAGE INDUSTRIES, 1962-82

Industry	Percent/year	Trend
Breweries	1.12	down
Fruit and Vegetable	1.02	down
Distilleries	0.87	down
Wineries	0.82	down
Slaughtering and Meat	0.46	down
Sugar	0.38	var.
Confectionery	0.30	var.
Biscuits	0.30	var.
Feed	0.29	down
Miscellaneous	0.24	up
Bakeries	0.21	var.
Dairy	0.08	down
Flour and Breakfast Cereal	−0.01	down
Vegetable Oil	−0.12	down
Soft Drinks	−0.23	var.
Poultry	−0.24	up
Fish	−0.27	up

[1] Preliminary estimates.

Source: M. Salem: "Productivity and Technical Change in Selected Food and Beverage Industries, 1961-82," Agriculture Canada (Unpublished).

TABLE 4 VALUE OF SHIPMENTS PER ESTABLISHMENT, SELECTED FOOD AND BEVERAGE INDUSTRIES, CANADA AND U.S., 1982

Industry	Canada	U.S.
	- million Canadian dollars -	
Breweries	41.7	126.6
Distilleries	24.5	38.1
Slaughter and Meat Proc.	16.3	20.1
Biscuits	15.2	16.1
Frozen Fruit and Veg.	14.4	25.1
Dairy	13.3	17.8
Poultry	12.5	24.2
Confectionery	9.0	13.5
Fruit and Veg. Canners	8.2	16.7
Wineries	6.7	9.4
Soft Drinks	6.5	12.8
Bakeries	1.0	7.0

Source: Statistics Canada, *Census of Manufacturers*, Ottawa.
U.S. Bureau of the Census, *U.S. Census of Manufactures*, Washington.

FIGURE 1. EXPORT ORIENTATION AND IMPORT PENETRATION RATIOS, FOOD AND BEVERAGE SECTOR

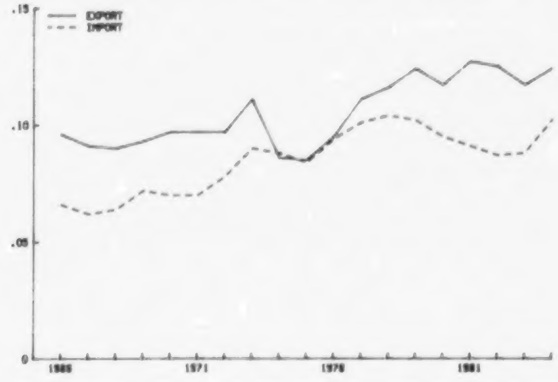


FIGURE 2. CANADIAN AND U.S. BROILER TURKEY AND BROILER CHICKEN PRICES AND PRICE RATIOS

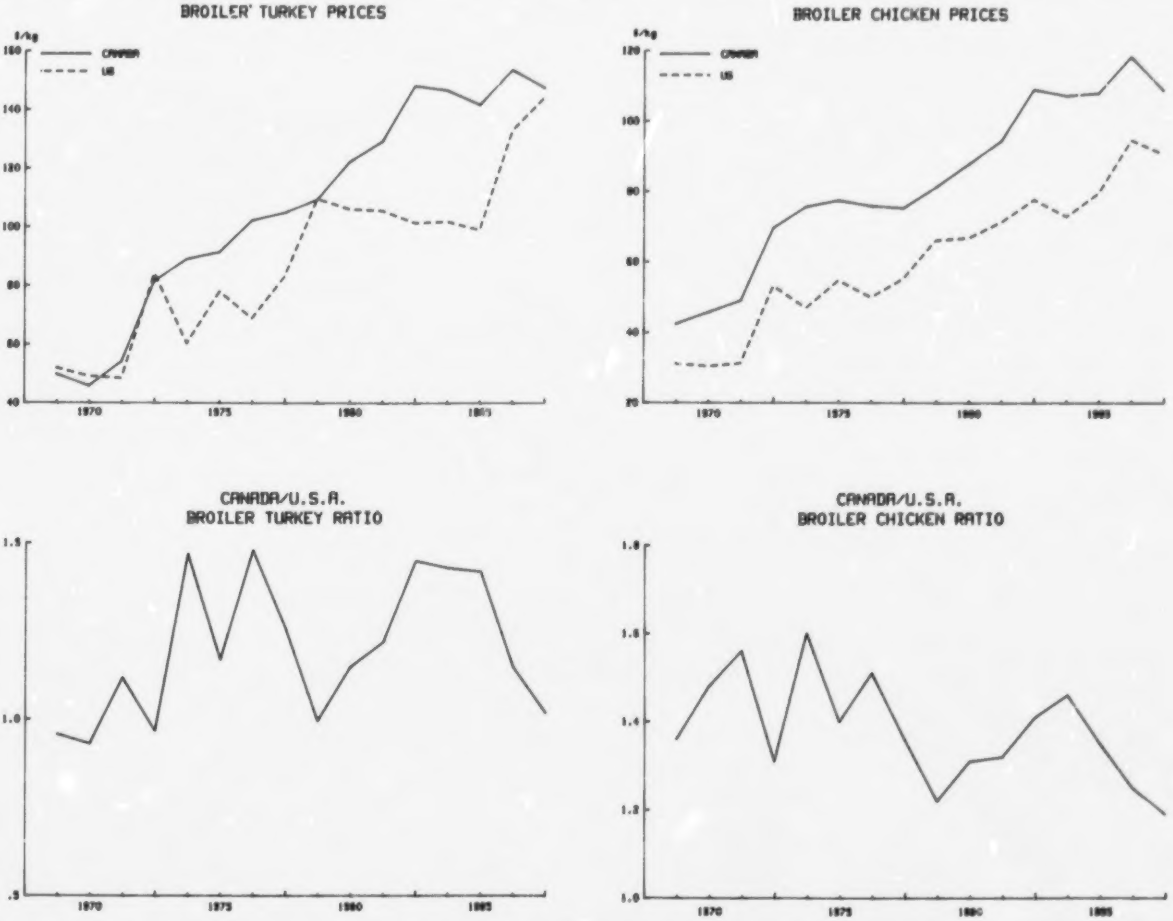


FIGURE 3. CANADIAN AND U.S. MILK SUPPORT PRICES AND TOMATO PRICES AND PRICE RATIOS

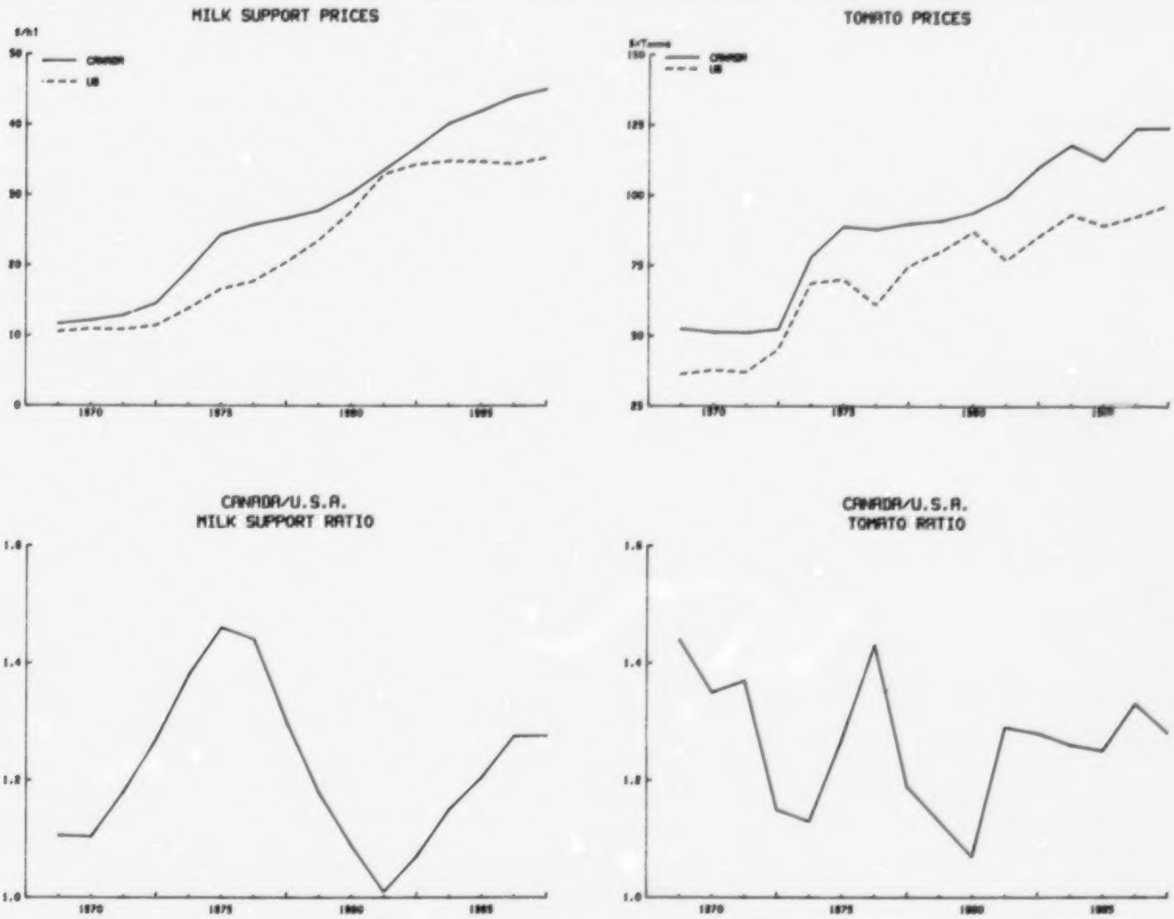


FIGURE 4. CANADIAN AND U.S. CATTLE AND HOG PRICES AND PRICE RATIOS

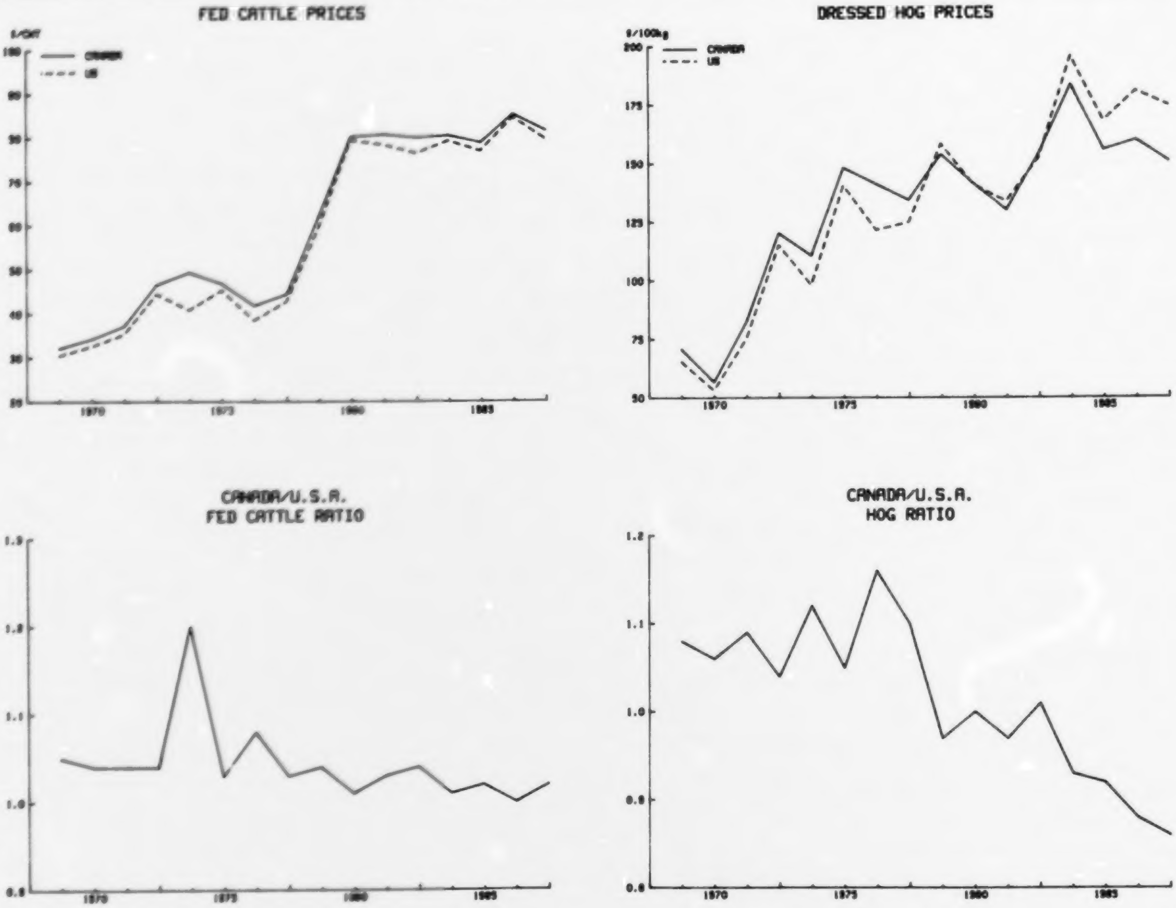


FIGURE 5. LABOUR PRODUCTIVITY INDEXES (1971 = 100)

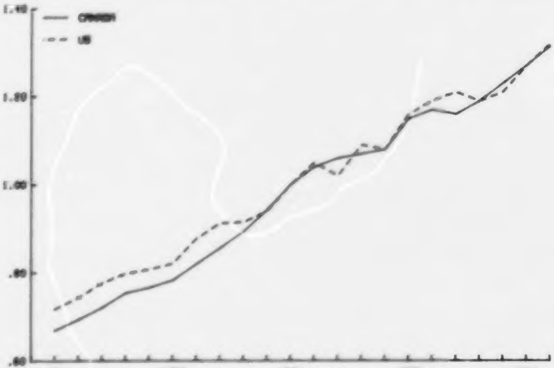
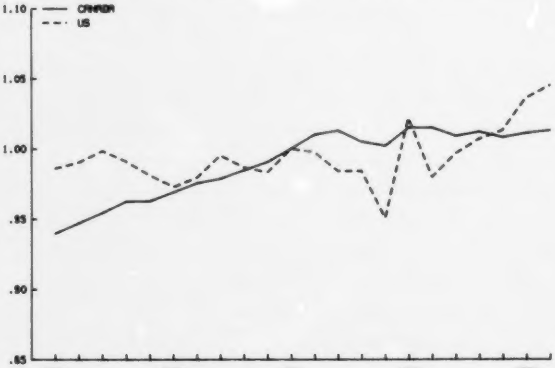


FIGURE 6. TOTAL PRODUCTIVITY INDEXES (1971 = 1)



The GPMC approach to the free trade negotiations

F. Cella

INTRODUCTION

Free trade is the one issue that has continuously received media attention since shortly after this government took over.

In fact, the media appear to be keener on exposing who is for or against free trade than on what the exact advantages of, or obstacles to free trade really are.

From the outset, the Grocery Products Manufacturers of Canada – the GPMC – had decided that it would work constructively and in a positive manner with the government on the free trade issue.

Our objective was to supply those responsible for the trade negotiations with the best possible information we could collect from our member companies about the impact of free trade on the grocery sector.

We were more interested in providing specific information as it pertained to constraints and opportunities that grocery product manufacturers might encounter in a free trade scenario than in capturing media attention.

What I would like to do today is review with you the efforts which culminated in a comprehensive report covering 14 grocery sectors (11 in food processing) which we submitted to Ambassador Reisman six weeks ago.

PARAMETERS OF THE GROCERY MANUFACTURING INDUSTRY

Before doing so it is useful to review with you the scope and parameters of our industry in Canada.

The GPMC members account for more than 90% of all grocery products sold through retail outlets.

Their combined annual sales are approaching $35 billion.

Nearly a quarter of a million Canadians earn their livelihood directly in the grocery manufacturing industry, and in fact, ours is the largest employer of any manufacturing sector in Canada.

You can appreciate that the agri-food industry, which accounts for about 12% of the gross national product, isn't uniform and homogenous.

Groceries include everything from processed and packaged foods to consumer products like razor blades, film, greeting cards, garbage bags, and paper products.

While GPMC represents the collectivity, we are divided by product category into about 20 sub-sectors such as dairy, soap and detergents, tea and coffee, confectionery, breakfast cereal, pasta, etc.

It is important that I explain these divisions of our sector, because you will immediately realize that each might be impacted differently by free trade.

And, of course, once this becomes clear, it is also easier to appreciate why GPMC would have great difficulty expressing a common view, for or against free trade.

On the other hand, something more useful would be to get an appreciation of the impact of free trade on each of the grocery sub-sectors; that is to say, the impact on companies manufacturing products in the various categories.

What are the opportunities that might open up for breakfast cereal manufacturers? What are the non-tariff barriers that would restrain the dairy sub-sector? Will excess capacity in plants in the U.S. northeastern seaboard constitute a threat to some grocery sub-sectors? etc., etc.

So with this as background, let me review what GPMC did on the free trade question.

REVIEW OF GPMC ACTIVITY ON FREE TRADE

As soon as the government announced its free trade initiatives, the GPMC created a task force to deal with this issue.

The Task Force consisted of a cross section of chief executive officers of our member companies supported by the senior staff of GPMC, and the Coopers & Lybrand Consulting Group.

We were approached in the spring of '85, shortly after the initiative commenced, by Jim Kelleher, the then minister responsible, to support the government and publicly commit the GPMC to a pro-free trade stand.

We told the minister that while we did not have a mandate to issue such statements, we would survey our member CEOs as to their views, and get back to him with the results by the end of August of last year.

We then designed our first questionnaire on free trade, which we asked CEOs to fill in themselves.

The first survey was basically attitudinal, but the attitudes reflected were those of people at the helm of their companies, and in the best position to judge the impact and consequences of free trade.

It is interesting to mention here that the percentage of responses indicated a degree of interest and concern unprecedented in the annals of GPMC.

The results were collated by Coopers & Lybrand Consulting Group and Don Jarvis, our Vice President, Government Relations in Ottawa.

The range of opinions and responses by the CEOs covered the spectrum, but there was a consensus on some of the areas they identified, if free trade were to become a reality.

These included non-tariff barriers such as supply management marketing boards, excess capacity in the U.S., and our ability to compete, employee benefit costs, economies of scale and the level of our dollar vis-a-vis the U.S. dollar.

In September 1985 the compilation of the first GPMC member survey was submitted to Minister Kelleher and to the Tom Burns Task Force working on his behalf with the business community.

This Task Force Report was also distributed to our own members, the provinces and other interested parties.

While it was clearly in the public domain, the GPMC made no overt efforts to attract media attention to our report.

In early 1986 members of the GPMC Task Force on free trade met with External Affairs Minister, Joe Clark, to apprise him specifically of the concerns of GPMC members who relied upon commodities under supply management.

And later this spring, we met with Ambassador Reisman to review our initial report and to discuss with him further useful work that our sector might undertake to support his efforts in the negotiating process.

This meeting resulted in the GPMC decision to go back to the membership for a more detailed survey of the questions related to free trade, by product category.

The questionnaire ranged from capital expenditure intentions to comparable labour and finished product costs, and it required considerable effort by each company to complete.

Notwithstanding the workload on our members, we were again pleasantly surprised by the high number of respondents, close to 75% of our member companies.

The responses were collated again and individual reports were prepared for 14 different sectors of our industry. These preliminary results were reviewed this summer with the industry associations that represent those commodity sectors to ensure that the GPMC findings were consistent with any work they had prepared on the issue of free trade. Not surprisingly both GPMC surveys in 1985 and 1986 confirmed all the research and conclusions these associations had reached on the issue.

GPMC has been able to report important considerations to Mr. Reisman for the following sectors:

- Bakery
- Canners
- Cereals
- Confectionery
- Dairy
- Frozen food
- Millers/rice/pasta
- Miscellaneous food
- Pet food
- Sweeteners
- Tea and coffee
- Health and beauty
- Paper
- Soaps and detergents

The major concerns in the free trade context for firms in these industries centered around capital investment, employment and competitiveness. For capital investment the key findings are as follows:

- the majority of the industry's sectors regard their existing plant as reasonably up-to-date, the major exception being the dairy industry;
- about 60% of the respondents regarded their equipment as up-to-date;
- the canners, cereals, confectionery, dairy, frozen food, pet foods and health and beauty sectors would all put capital investment plans on hold until they know the length of a planned adjustment period;

- bakery, sweeteners, tea and coffee, paper, and soaps and detergents believe free trade would have no impact on their future capital investment plans;
- most respondents did not believe free trade would lead to expansion of plants;
- the majority of companies in all industry sectors recognized substantial levels of excess capacity existing in the United States, particularly in the northeastern states;
- while free trade may not initially encourage or lead to new capital formation in the grocery products sector in Canada and may lead to dis-investment as firms in the U.S. decide to utilize mothballed capacity, much will depend on the length and terms of the adjustment period that will be negotiated.

In employment, under free trade, most industries expect job loss to occur. The exceptions are cereals, tea and coffee, and paper products, which contemplate no impact. Only a few CEOs scattered across the sectors expect employment to be created, and it reflects niche market opportunities and where efficient facilities exist, production on a global scale.

The current exchange rate is seen as a principal influence on enhancing Canadian competitiveness by allowing manufacturers in Canada to absorb other cost disadvantages such as higher labour costs (benefit packages) and ingredient costs which result from supply management/marketing boards.

With the exception of tea and coffee, which buy all ingredients in U.S. dollars, and therefore, would like to see the Canadian dollar appreciate to 80¢ plus, all the sectors wish to continue with the current exchange rate. The most popular band is 70 to 75¢, with some respondents favouring a devaluation to 65 to 75¢.

Finally, of the eleven food sectors analyzed – bakery, cereals, dairy, frozen food, millers/rice/pasta and pet food regard supply management marketing boards as the most significant non-tariff barrier.

In addition to this research work, GPMC was keenly interested in supporting the creation of the sectoral advisory groups – particularly the agriculture, food and beverage and the consumer and household products SAGITS. For example, we advised the minister that the agriculture, food and beverage SAGIT should be retained as one entity and not divided up into sectoral SAGITS as many groups recommended.

We also undertook a more detailed study of the impact of supply management marketing boards on the relative competitiveness of specific food products manufactured by our member companies that have poultry and dairy ingredients as major cost inputs. The study showed conclusively the higher cost of these inputs for all the products processed in Canada compared to those made in the U.S.

As I mentioned earlier, this comprehensive report was delivered to Mr. Reisman about six weeks ago, and subsequently reviewed directly with him and his senior staff.

CONCLUSIONS

So much for the short history of the GPMC on supplying useful information on our sector to the government as it pertains to free trade.

The jury is still out on whether an agreement can successfully be concluded with the U.S.

But if it can, the comprehensive document submitted to Mr. Reisman at the end of October, which is now also in the public domain, will certainly serve usefully in the specific negotiations relating to our sector.

Certainly, the various product category reports could be important to determining appropriate adjustment periods.

The magnitude of difficulty that various non-tariff barriers represent can also be useful in determining how to proceed in the negotiations.

And even if a trade agreement cannot be concluded, I still do not begrudge the time and effort GPMC, our task force on free trade, our staff and I, as chairman of the task force, have devoted to this project.

The government, and indeed we ourselves, now have a better idea of where we stand, sub-sector by sub-sector, in terms of efficiency, productivity and competitiveness.

ADDRESS BY THE RIGHT HONOURABLE BRIAN MULRONEY, P.C., M.P., PRIME MINISTER OF CANADA

Brian Mulroney

When we reflect about the fabric of the Canadian nation, nothing defines it more clearly than Canadian agriculture. When we speak about the national interest of our country, nothing is more vital than the well-being of Canadian agriculture.

That's why I wanted to come and talk to you today, not strictly about the agenda of Canadian farmers, but about these issues as they affect our nation as a whole. Not strictly about the problems of the agricultural sector, but to try and situate them within the larger context of the national interest.

When we talk about the concerns of Canadian farmers, we're not talking about sectoral issues, we're talking about societal issues. Many of you – in the farm leadership and agricultural administration – have been saying this for years.

All of us here today understand the importance of Canadian agriculture to the Canadian economy as a whole. You know the figures by heart:

- Nearly half a million Canadians employed directly in agriculture.
- Another million Canadians employed indirectly in agriculture or food.
- It's a huge industry, with wheat exports alone last year of $3.8 billion.

In the strictest economic terms, what happens in Canadian agriculture is vital to the Canadian economy as a whole. Farming is critical to our small business sector, with nearly nine farms in 10 family-owned.

Most of all, farming is about people, about the land, about inherited values, our way of life. When farmers are hurting, the nation is hurting. When agriculture is not prospering, the national interest is not well served.

That, unhappily, is the situation of the Canadian grain sector. It is a situation which we in the Progressive Conservative government have been working hard to alleviate. We have been trying to bring some remedies to bear, not just in the interest of farmers and agriculture, but for the well-being of the nation, and in the interest of Canada.

The problem of the Canadian grain sector is two-fold: markets and money.

The world agriculture system has been turned upside down by the trade subsidy war between the European Community and the United States. The trade war between the U.S. and the EC has in turn affected every Canadian grain farmer.

For our farmers, protectionism, subsidies and unfair trading practices are not terms in some economic glossary. They are living with the reality of it. And we must deal with the reality of it. As a nation, as a people, in the best Canadian traditions of solidarity and sharing.

Even before our election as a government, the party I am privileged to lead formulated a comprehensive and coherent program for Canadian agriculture. If you go back and read our Prince Albert declaration of July 1984, I think you will agree we have adhered to the principles and delivered on the promises.

Lower interest rates have meant relief for Canadian farmers. Farm interest rates have declined by 3 points since we took office. And for every point of interest rate relief Canadian farmers save over $100 million.

- We've abolished the farm fuels sales tax.
- We've doubled cash advances under the advance payments for crops act.
- We've introduced legislation to establish farm debt review boards.
- We've established a $500 000 capital gains tax exemption for farmers.
- We've amended the western grain stabilization act to allow for payments prior to spring seeding when farmers need it the most. The final $279 million were sent out just yesterday.

We have delivered. The record is good. We can do better, as we must.

The point is that there is a government in place which is sensitive to the problems and the issues of Canadian agriculture. Your cares are our concern.

Agriculture has three articulate advocates in John Wise, Charlie Mayer and Len Gustafson. They make the case well in Cabinet, as other members do in Caucus. But the point is that they find a caring and concerned audience, in Cabinet and in Caucus.

It has been obvious to all of us for some time that Canadian wheat farmers confronted a particular set of problems this fall. The irony of it was that our grain farmers were bringing in a bumper crop, more than 64 million metric tonnes, at a time when world markets were skewered by the subsidy wars.

As the farm leadership can attest, we have taken action on a global scale. After I met with the farm leadership in Vancouver, it was largely at Canada's initiative that agriculture was included on the agenda of the Tokyo Summit.

At Punta del Este, under the leadership of Joe Clark, Canada was in the forefront of those countries calling for new ground rules for international trade in agriculture. It was an important victory that the EC nations agreed to discuss the issue of agriculture subsidies in the next GATT round in Geneva.

As well, Charlie Mayer hosted last June, in Whistler B.C., a Summit meeting of the leading wheat producing countries – Canada, the U.S., Argentina and Australia – plus the European Community. There will be a second meeting next February in the U.S. We are making progress in that we are talking, and that we have the issue on the GATT agenda. But in the meantime, the Canadian farmer is suffering through no fault of his own.

The irony is that Canadian farm productivity has never been higher. From 1946 to 1985, Canadian agricultural output increased by 85%. Output per person increased by 350% from 1946 to 1985, as compared with 240% in the manufacturing sector. Canadian farmers have been doing a better job than ever.

We have a great land, great people, and a great product. But our farmers have been put in an unfair comparative position. For soft wheat, Europeans are receiving $275 a tonne. To be competitive internationally, they provide an export subsidy of $190 a tonne. Our farmers receive $130 a tonne at export position. In those circumstances it is simply unacceptable for the national government to stand on the sidelines.

Canadians understand why their government must provide whatever assistance is necessary to see farmers through this difficult period.

In the House of Commons on October 3, I pledged "to devise an effective financial assistance program to enhance the cash flow of Canadian grain farmers," and I added that initial estimates of assistance required amounted to approximately $1 billion. Today, I am pleased to be able to tell you that our government is delivering on that promise through the $1 billion special Canadian grains program.

The Cabinet has approved an assistance package to be paid in two parts.

- The first $300 million will be remitted to individual producers early in the new year.
- The second payment of $700 million will be made next spring.

John Wise and Charlie Mayer will give you the precise details in a few minutes.

- With this program, direct federal government support to the grain sector has now quadrupled since this government came to office in 1984.

We are implementing this program within the fiscal framework which has created our environment of falling interest rates. Our concern for sound economic and fiscal management is undiminished because it is the soil in which our economic recovery has taken root.

Our concern for Canadians comes before all else.

OUTLOOK CONFERENCE CLOSING REMARKS

The Honourable John Wise
Minister of Agriculture

The Honourable Charles Mayer
Minister of State (Canadian Wheat Board)

MR. WISE:

As you have heard from the Prime Minister, we are delivering today on our commitment to provide one billion dollars in special assistance to Canadian grain and oilseed farmers.

We made a promise to Canadian farmers. And today, we're keeping that promise.

As I said when I spoke to you yesterday, this government has already introduced many effective programs to help Canadian producers. We don't have to take a back seat to anybody in terms of the measures we've introduced on behalf of farmers. And in terms of the high priority we have given agriculture.

But the subsidy war is having serious consequences, so we need even further measures. Our grain and oilseed farmers asked for special assistance. They deserve it. And they're getting it -- the Special Canadian Grains Program.

This is the largest - and most significant - special assistance measure ever undertaken on behalf of Canadian farmers.

Just as the Prime Minister promised, it is new money. It is cash. And it is one billion dollars directly into the pockets of grain and oilseed farmers across the country.

MR. MAYER:

I am pleased to have had a chance to be part of the process of developing the program. I also want to thank the farm leaders that came to Ottawa twice to sit down with John and me across the table when we had an opportunity to see each other first-hand, to have a good understanding of the problems that each one of us faces, from different parts of the country and, as a result of that, be able to reach a consensus on how the payout would be derived. They reached a consensus on the basis of seeded acreage, on the basis of yields and on the basis of the decline or the hurt -- the decline in farm prices. And the payment formula is directly in relation to, or directly as a result of, the consensus reached by the farm leaders. I think that's something to be commended because it's one of the first times, if not the first time, that I've been involved in the process where farmers from different parts of the country were actually able to understand first-hand what other people's concerns were (and) on the basis of that kind of an understanding, those farmers arrived at a major consensus.

MR. WISE:

The money will be paid in two parts. The first three-hundred million dollars will go to individual producers as soon as possible this winter. The second payment of seven hundred million dollars will be made in the spring.

This method gets some money to farmers quickly. It also lets farmers know how much to expect, so they can plan ahead.

We are limiting payments to individual producers to a maximum of twenty-five thousand dollars.

In the West, the first cheques will be mailed to most farmers based on Canadian Wheat Board permit book data. These farmers can then verify the information used to calculate their payment. Their final payment will be adjusted, if necessary.

In the East, application forms will be mailed to farmers who received corn or soybean stabilization payments for the 1985-86 crop year.

Any farmer who's not covered by one of these programmes, can obtain an application form from local grain elevators, grain producer organizations, Agriculture Canada regional offices or research stations, or any Farm Credit Corporation Office.

Or you can contact the program Administrator in Ottawa, who will send you an application.

MR. MAYER:

The crops to be covered are wheat - both spring wheat and durum - barley, oats, rye, mixed grains, corn, soybeans, canola, flax and sunflowers. Specifically excluded is corn for silage or any cereal crop put up for silage. We want the program to work as smoothly as possible for two reasons – in order to get the money into the hands of producers as quickly as we can and secondly, to keep administration costs to a minimum. With that in mind, we are setting up two committees that will be review committees. They will be composed mainly of producers – three producers from the eastern part of the country with one federal Department of Agriculture representative, and, in addition to that, there will be a producer group in the West that's made up of four farmers plus, again, a Department of Agriculture official. They will provide advice to the program on administration and those kinds of details. They will also be looking at specific concerns. We have already identified one of those concerns, and that is the area in parts of the southern Prairies that has been affected by drought in the last four or five years. We want to communicate with the committees so that we can take into account the special concerns like the one that I have just mentioned, and we will be asking the committee to take a special look at the drought area in the southern Prairies.

MR. WISE:

The Special Canadian Grains Program is not a cure-all for the ills of the grain and oilseed sector.

A stronger future depends on two factors.

First, Canada's continuing efforts at the international level to restore sanity and fairness to world agricultural trade.

And secondly, a meaningful commitment on the part of governments, and farmers themselves, to working together on overcoming the difficulties that face the industry.

I am announcing today that the Government of Canada will launch a new round of consultations with farm groups and the provinces early next year.

This process will move us closer to realizing the objectives of the National Agriculture Strategy that I recently signed – along with my 10 provincial counterparts.

Our challenge is to develop effective policies that help the industry overcome current problems. And long-term policies that will put the industry in a stronger competitive position.

MR. MAYER:

In line with what the Prime Minister said, Canada will continue to seek solutions to the cause of the problems, which is the international trade subsidy war. We are living in a world, as far as grains and oilseeds are concerned, whereby production is driven not, or prices are set, not by normal supply and demand functions but by political decisions. Canada has an excellent international reputation, and it's been my experience that when we have had a chance to participate in international meetings that we have a voice that is listened to, and we intend, again as the Prime Minister said, to make every effort because I think most of us realize, in the room, that has to be the long-term solution to the problems we face in the grain and oilseeds business. In the meantime, we are sending a signal to our competitors and our customers alike that Canada is in (as George Brinkman said in the opening address yesterday morning) that we are in the grain and oilseeds business on a permanent basis and we intend to stay. And the announcement of the billion dollar program today, I think, is a prime example of the commitment that the government I'm proud to be a part of has to this great industry.

MR. WISE:

Our challenge is to plan together toward the future.

That's not just a challenge for governments. And it's not just a challenge for farmers. It is a challenge for all of us. We're talking about the future. And I think the future deserves our very best efforts.

But in the meantime, the Special Canadian Grains Program – and many other federal agricultural measures – are building a bridge to tomorrow.

Thank you.

(Western farmer representative asks about the use of the Canadian Wheat Board permit in calculating payments to Western farmers, and whether the payments will be calculated on the basis of cultivated or seeded acreage.)

MR. MAYER:

Well, thank you very much. The calculations will be done on the basis of the formula that was arrived at the meeting that Charlie Gracey has just spoken of. It will be derived on the basis of seeded acreage plus yield – productivity – by the amount of hurt, or the amount of decline in price.

And the reason we are using, or will be using, Wheat Board figures and statistics is that it is one way to do two things: to minimize the cost of administering the program, and secondly, it's another way of getting the money out just as quickly as we possibly can. So the direct answer to your question would be using the formula, which is seeded acres.